THE

physical therapy

REVIEW

Volume 35 - Number 11 November 1955

REHABILITATION ISSUE

Rehabilitation: The Expression of an Ideal — SWITZER

Medical Rehabilitation Redefined — DELAGI, WEINSTEIN, VOGEL and ABRAMSON

Physical Medicine and Rehabilitation Methods in the Treatment of Psychiatric Patients — MENDELSON

Assistive and Adaptive Apparatus for Upper Extremities — BENNETT and STEPHENS

The Role of Physical Therapy in the Surgical Management of Heart Disease — CRUICKSHANK

Some Practical Aspects of Gait Training — COOK

Editorial — RUSK

Second Congress
World Confederation for Physical Therapy
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Hipps, H.E.,'Treatment of the 'Hopeless' Cerebral Palsy Patient,'JOUR.OF BONE & JOINT SURG.,Jan.'50

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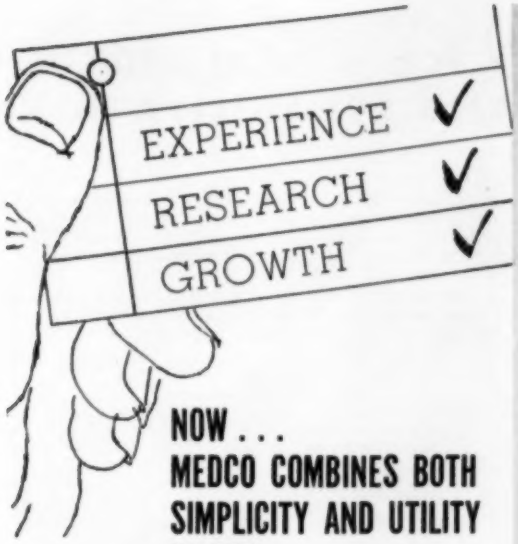

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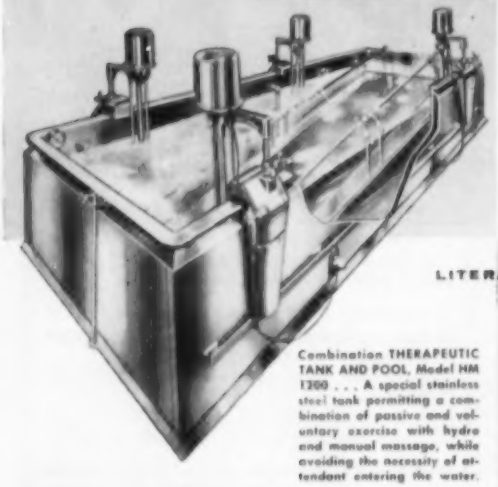

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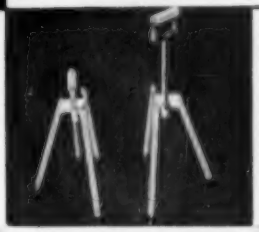

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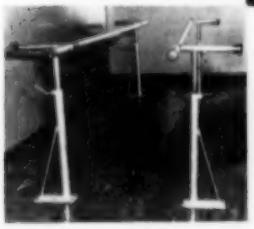

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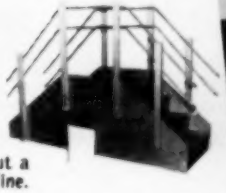

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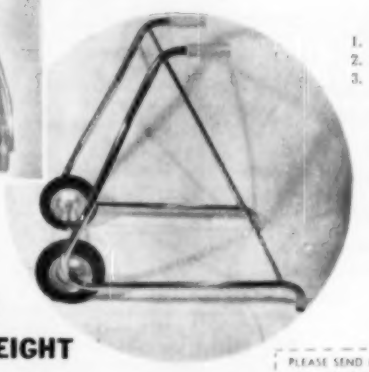

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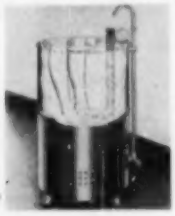

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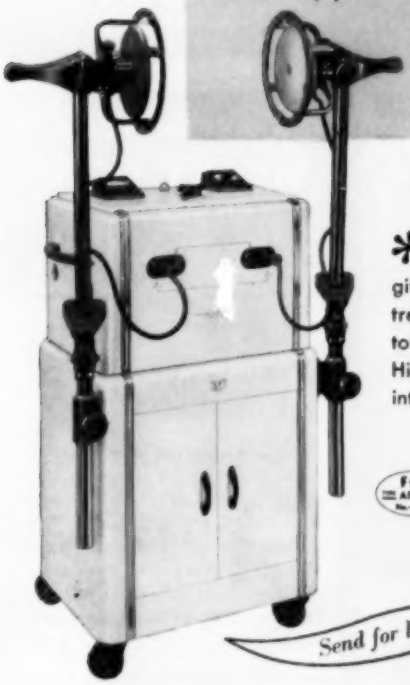

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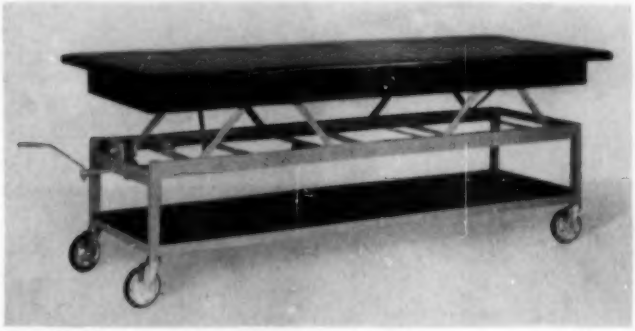

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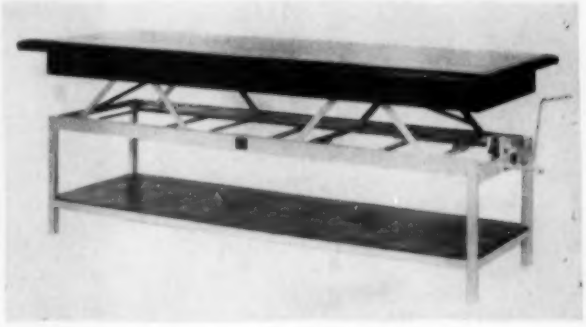

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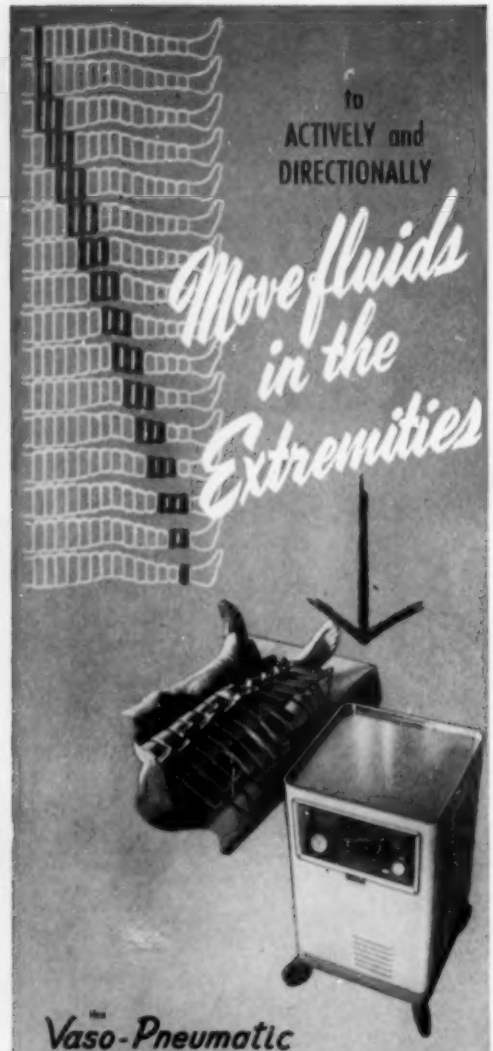

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———o———

Perhaps some of you good people have seen a quite large, man-sized, brilliant red, ceramic ash tray with the name Birtcher on it. We furnished them to intern quarters around the country earlier this spring and we shipped out a fair quantity to the MD's. These red ash trays, we hope, are good-will builders but it seems like trying to sell therapeutic equipment the hard way. Anyhow, I have a lot of these big red ash trays left. If you would like one for your desk at the hospital or two or three extra to scatter around for your smoking patients to use (rather than clutter up your floor), drop me a post card and I will make shipment with my compliments as long as we have any of them left. This may also give me some clue, of course, as to how many of you good people read the stuff I publish on this page each month.

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The Physical Therapy Review

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Rehabilitation: The Expression of an Ideal

Mary E. Switzer, A.B.

> "A niche of usefulness and self-respect exists for every man however handicapped: but that niche must be found for him. To carry the process of restoration to a point short of this is to leave the cathedral without a spire. To restore him and with him the future of our countries, that is the sacred work."
>
> JOHN GALSWORTHY

For as long as we have knowledge of human affairs, men and women have sought to give meaning to their efforts and their lives by pursuing ideals. We publicly acclaim success in the material things — the longest bridge, a startling new weapon, a better automobile — and then we privately measure them with the yardstick of our personal ideals. Was it enough that the bridge was strong, that the weapon was powerful, that the automobile would run faster?

No, in the calmer air that follows success, we find that all these things are steps in the long, never-ending procession of human betterment, that the ultimate importance of the things we do is finally reckoned in terms of how much we have helped advance the fortunes of our fellow beings, present and future.

Some persons come to this realization after a lifetime of effort. Others sense it early in life. Perhaps the group which feels this most instinctively are those who elect to devote their lives to the care and restoration of the sick and injured.

In such an atmosphere of dedication to others, the healing arts have come to be a part of the basic fabric of an enlightened modern society. Success in curative medicine and surgery has been chronologically linked with equal advances in our social, industrial and economic life. All these are forces which interact upon each other, so that health affects job and family, income influences health and social life, etc. When we set out, then, to plan a program of enlightened and adequate service to meet the true needs of disabled people, we must see beyond the pathology of the disability itself and understand the total setting in which the individual lives. This we call rehabilitation. It represents, therefore, more than a technic, for as Dr. Leonard Mayo has expressed it, rehabilitation is first a philosophy, second an objective and finally a method.

In many of its facets, the idea of rehabilitation is not new. Certainly the desire to help those who are disabled has existed for centuries and has been expressed in many ways, according to the knowledge and the mores of the times. Four things have produced rehabilitation as we know it today: the accumulation of enough medical and other scientific knowledge to greatly reduce the disabling effects of illness and injury; a slow-dawning appreciation of the tremendous capacity of the human body for developing compensating functions; a growing understanding and acceptance of disabled people as capable producers in our industrial society; and, finally, a widespread determination among the American people to do something about the mounting toll exacted by disability in this country.

This last fact — the ever-widening circle of interest expressed through so many private and public agencies and groups — is perhaps the most important single index to both present and future growth of rehabilitation. Just as re-

Director, Office of Vocational Rehabilitation, Department of Health, Education, and Welfare, Washington, D. C.

habilitation is not the exclusive province of any one profession, neither is it the responsibility of any one group or agency. The Federal-State program of vocational rehabilitation, engaged in this work for thirty-five years, has seen its efforts strengthened immeasurably over the years as private agencies have formed to help in the conquest of disability. Many of them, such as the National Foundation for Infantile Paralysis and the National Society for Crippled Children and Adults, have not only generated a vast expansion of services to the disabled but also have played key roles in increasing the number of trained and qualified personnel so urgently needed in physical therapy and other specialties.

Public agencies, too, have been alert to the potentials of rehabilitation. In 1943, in the midst of the greatest war in history, the Congress enacted a new and historically important law to broaden the vocational rehabilitation program. For the first time, Federal grant funds could be used to provide medical, surgical, and hospital services for the disabled and thus take advantage of the exciting progress being made in medicine. Among the other major improvements was the inclusion of the emotionally ill as eligible for service.

The public hospitals in many cities and a growing number of chronic disease institutions have taken advantage of rehabilitation progress to shorten hospital stay, free beds, discharge many patients at a higher level of physical capacity, and teach others to care for themselves in home or hospital.

Following World War II, the Veterans Administration, faced with an unprecedented number of disabled veterans needing modern care and services, performed a remarkable feat of reorganization and staffing to enable its hospitals to provide an effective physical medicine and rehabilitation service and to establish rehabilitation concepts throughout the medical service. During this important period of professional growth, there was close collaboration between the medical service and the American Physical Therapy Association. Today the Veterans Administration, with 625 physical therapists serving patients in hospitals and clinics throughout the country, is the largest single employer of physical therapists in the world.

The rehabilitation "movement" has been in evidence in many and diverse ways. Comprehensive rehabilitation centers, which were nearly nonexistent fifteen years ago, have become an integral part of the picture today when a community plans for adequate services to its disabled. Medicine has made remarkable progress in instilling rehabilitation principles and technics into medical practice and in developing a recognized specialty in physical medicine and rehabilitation. Laws have been changed so that the benefits of rehabilitation could be focused upon disabled beneficiaries of public programs such as workmen's compensation, public assistance, and others. Educational institutions have broadened their curricula to prepare students for careers in rehabilitation. Industrial firms have revised equipment and personnel policies to take advantage of the skills of handicapped workers. Crippled children's societies, sheltered work shops such as Goodwill Industries, professional groups such as the National Rehabilitation Association—all have grown rapidly to try to meet the pressing need of thousands of disabled persons who require rehabilitation services and cannot get them.

Why should there be this spontaneous growth of interest and activity in doing something constructive for the handicapped? I believe it is because the very nature of this work touches so closely our sense of human justice, and the ideals which lie just below the surface of our actions. Because of this essential rightness of our work, rehabilitation will develop as a fundamental instrument of our society in seeing that every impaired person has his chance in life.

For those who have chosen a career in rehabilitation, the responsibilities are great, for we deal with the futures of thousands of our fellow beings. It requires that our plans be a blend of wisdom born of experience and boldness born of faith in the work we do.

In the public program of vocational rehabilitation, we have been most conscious of our responsibility both for day-to-day soundness in administering the service and for adequate planning for the needs of future years.

In recent years, through this Federal-State program, 60,000 handicapped persons have been restored annually. In many respects, that is a remarkable accomplishment. Yet we cannot escape the fact that for every person restored, three cases—newly disabled or newly eligible for service—have had to be by-passed during the year. In other words, we have been reaching only about one-fourth of those who could and should be rehabilitated, with no provisions whatever for reaching the backlog of 2,000,000—the accumulation of years in which our rehabilitation effort has lagged far behind the needs of the disabled.

Alongside the question of the extent of need

among the disabled is a consideration of good government. The public rehabilitation program has become an increasingly potent weapon in dealing with disability among those who must be maintained at public expense on welfare programs. Tax funds are today supporting hundreds of thousands of disabled individuals who through no fault of their own cannot support themselves and their families. In the four public assistance programs in which the Federal government participates, the cost for maintaining these disabled people now is approaching a half-billion dollars. Additional hundreds of thousands of dollars—for which no total has ever been calculated—is being spent to maintain other disabled persons in other assistance programs, in hospitals and other institutions.

A special study conducted by the Office of Vocational Rehabilitation and the 88 state rehabilitation agencies revealed that over 11,000 of the disabled persons rehabilitated in 1953 had been receiving assistance payments at the time they applied for rehabilitation services. They represented 18.5 per cent of the people rehabilitated in that year. They had been receiving public assistance at an estimated rate of nine million dollars a year. After rehabilitation, instead of consuming public funds, they were paying federal income taxes at a rate which, in four years, will repay the Federal government for its investment in their rehabilitation—and that takes no account of the very substantial state and local taxes which these people also pay.

These were some of the considerations which the President had in mind when, in January of last year, he proposed that the Nation adopt a program of growth in rehabilitation, based on a plan of year-by-year expansion, with a goal of rehabilitating 200,000 disabled persons annually.

The Congress, with full bipartisan support, passed legislation to make this expansion possible and on August 3, 1954, the President signed the new measure into law. We have, therefore, in the Vocational Rehabilitation Act of 1954, a legislative basis on which to develop both the Federal-State program of vocational rehabilitation and the rehabilitation resources of the Nation generally. The Act provides for improvement in several key phases of rehabilitation, as follows:

First, it furnishes a new basis for Federal-State financing of the public program. It provides for three types of Federal grants-in-aid: (1) for support of the basic rehabilitation services; (2) for extension and improvement of programs and services; and (3) for special projects to advance the field generally. Each type grant has its own matching formula, geared to the nature and purpose of the grant itself.

Second, the Act authorizes a program to train rehabilitation personnel. Without a new supply of qualified people any substantial expansion is obviously out of the question. This was made clear during hearings held in 1953 and 1954 before Senate and House Subcommittees considering legislation for rehabilitation, at which such medical leaders as Dr. Howard A. Rusk, Dr. Henry H. Kessler, Dr. Charles A. Wise, and others expressed their concern at the shortage of rehabilitation personnel. Said Dr. Rusk before the Senate Labor and Public Welfare Subcommittee: "In my opinion, the greatest single obstacle to the more rapid development of all types of rehabilitation services is the shortage of trained personnel . . . the granting of these funds for research and training is an essential part of this proposed comprehensive program, for the other aspects of the program cannot be implemented unless we have additional trained rehabilitation workers to staff our expanded program."

The new program of training grants, authorized by the Act and now entering its second year of operation, will benefit not only the public program but also will produce a new stream of young talent for the whole rehabiliation effort of the country — and thus will ultimately benefit all disabled people who need services. Grants have already been made to nine physical therapy schools for strengthening and expanding their teaching programs. Other grants have been made to aid the teaching programs of universities and colleges preparing physicians in rehabilitation, occupational therapists, rehabilitation counselors, social workers, and others.

Third, a program of research in rehabilitation, to open up new knowledge and make it possible in future years to restore those who now are "hopeless" is provided for in the Act. Federal support of such research previously had been quite limited. The prospects now are much brighter for opening many doors which have been closed for too long. To date, twenty grants for research and demonstrations in a wide range of rehabilitation activities have been made, after review and approval of the National Advisory Council on Vocational Rehabilitation. The latter body, also provided for in the new law, is composed of outstanding national authorities in medicine, education, public affairs, management and labor; they serve as a highly informed and mature group which helps guide the program of special projects into the most creative and productive areas of investigation.

Fourth, provisions now are included in the law for financial support to build, equip, and staff many more rehabilitation centers and other facilities for the handicapped. The need here is crucial. In dealing with the problem, the President asked for, and the Congress approved, two legislative steps. One was a provision in the Vocational Rehabilitation Act to authorize Federal grants-in-aid in the expansion, alteration, equipment, and initial staffing of existing rehabilitation facilities, and for the conversion of buildings to this purpose. The other provision, now a part of Public Law 482, the Medical Facilities Survey and Construction Act of 1954, authorizes grants for the construction of comprehensive rehabilitation facilities through the Hill-Burton system, which has served so successfully in developing the Nation's hospitals.

Thus the stage has been set for the Federal Government to do its share in pushing forward toward the goal of providing rehabilitation for every disabled American who needs service. But one of the "facts of life" which a public official learns, and which all citizens should bear in mind, is that the passage of a law does not in itself solve problems. The new law *does* provide a whole new horizon for attacking the problems of disability — and now it is our job, all of us working devotedly together — to see that the benefits intended by this law are actually brought to the disabled persons for whom it is intended. In justice to those handicapped thousands who look to us for rehabilitation, for release from inactivity and boredom, for jobs and new lives, we *must* make it work. The ultimate success of the new law rests in many more hands than just the officials and staff of the Federal-State program, for it requires the understanding cooperation of every businessman who hires workers; every doctor and therapist who has skill to use in correcting handicaps; every teacher who can prepare a handicapped child or adult for useful work; and every citizen who can help a handicapped person to "belong" in a community.

In the long process of recovery and rehabilitation which the disabled person goes through, there are certain points where success or failure looms especially important, where the individual's whole future often is cast, for good or bad. One of these is the immediate postacute stage, when despondency so often dominates the thoughts and there is no future. Here the physical therapist, like the nurse, can be the deciding influence. Here the long rehabilitation process begins — and if it does not begin here, it frequently is never successfully completed. For the therapist to show the disabled person that there *is* a future, that there is a life ahead which, though different, is still full of promise for activity, friends, jobs—this is preventive medicine of the highest order. For just as the long-present cancer presents the great risk on the operating table, so does the long-neglected disabled person present the great risk of failure when rehabilitation begins.

The great English novelist, John Galsworthy, quoted at the beginning of this article, stated this vital truth when he spoke to the Allied Conference on After-Care of Disabled Men in Washington, D.C. in 1919: "The crucial period is the time spent in the hospital. Use that period to recreate not only the body, but the mind and will-power, and all shall come out right; neglect to use it thus and the heart of many a sufferer and of many a would-be healer will break from sheer discouragement."

The physical therapist, equipped to revitalize and redirect the functional powers of the human mechanism, can also be a potent force for arousing in the disabled patient that spark we call the human spirit, without which complete rehabilitation is never possible. In every person, there is a desire for independence; whether it is submerged in the psychological aftermath of serious disability usually is determined at one or more decisive points in the recovery process. We can see it in the hospital and the rehabilitation center, where one patient pursues exercises and activities of daily living relentlessly as his first steps toward independence, while another's effort is listless and the progress is slow. But that is but Stage One, for the same difference appears later when the disabled persons, discharged and home, are considered for job training, employment, or other activities.

Thus the physical therapist's work, whether functional or inspirational, affects directly both the patient and all the others of the rehabilitation team, in and out of the institutional setting, who work with the patient. Because, in rehabilitation, we are working with so many facets of human nature and human need, it is quite natural that rehabilitation should develop as a "teamwork" process. One of the most heartening signs of progress during the last few years has been the willingness of so many key professional groups to work closer and closer together as a unit in solving the problems of a disabled individual. In this direction lies one of our greatest hopes for advancing rehabilitation methods and for reducing the number of cases who do not respond to present technics.

Out of the work of such teams, and of the growing number of professional and other people, each investing his life's career in the present and future of rehabilitation work, there is developing steadily a national awareness of disability and the moral obligations we all have to use modern resources to combat it. Rehabilitation, as a vehicle for moving against this national and international problem, often has appealed to civic-minded and responsible people for different reasons — sometimes as a social right, sometimes as a matter of economic necessity, sometimes as an important measure in conserving human resources. These are sound and practical reasons, centering upon problems which all of us must consider daily. Yet behind them is the less tangible, more powerful surge of our conscience, which tells us that this is work which builds and ennobles people—work in which our finest ideals may be realized in the rich and moving experience of advancing humanity one step further.

Medical Rehabilitation Redefined

Edward F. Delagi, M. D., Lawrence Weinstein, B. S., Morris Vogel, B. S., and Arthur S. Abramson, M. D.

The use of bed rest in the treatment of disease processes has played a major role in the practice of medicine for most of the past century. This has been due to the unquestioned authority of two men, Hilton and Virchow. The concept of rest as a universal panacea stems from Hilton's classic, *Rest and Pain*. Therapeutic preoccupation with the pathological process arose as a result of Virchow's concept of cellular pathology. Neither of these concepts is entirely incorrect, but they must be modified to more fully meet the needs of the sick and disabled person.

Disease disturbs not only the internal environment but also the individual's interaction with his external environment. Thus consideration must be given not only to the person's physical and emotional changes in response to disease but also to the social and economic handicaps arising in its wake. These, besides the cellular pathology itself, are all factors determining the difference between health and disease. And these are usually most severe in the patient suffering from prolonged illness.

There is a continuing shift of emphasis in medical practice from the management of acute to that of chronic disease. The reasons for this are manifold. Chemotherapy and antibiotics have markedly reduced the morbidity and mortality rates of the infections and threaten the complete conquest of the microbiological causes of disease. Public health measures and rising living standards are among some of the reasons for the considerable drop in the rate of infantile mortality. Thus, medical progress has been in the direction of helping mankind to live longer. Little progress, however, has been made in decreasing the morbidity and mortality rates of those disorders which go hand in hand with the process of aging. If anything, these rates are increasing at a faster pace than the increase in aging of the population. The result of this tendency is that the kind of illness which does not necessarily kill, but frequently disables, is becoming a growing medical responsibility. Disorders of the vascular system are probably the most important causes of illness and death in the older age group. Cerebrovascular accidents, coronary artery disease, and occlusive peripheral arterial disease are all manifestations of these disorders and in their wake leave large numbers of hemiplegias, cardiac cripples, and amputees.

There is a current controversy as to whether arteriosclerosis is part of the senescent process, or is a preventable disease which takes time to develop and, therefore, tends to become manifest later in life.* The latter viewpoint, if correct, gives promise of preventive measures against the disabling disorders of the vascular system. But that time is not now, nor is the time now for certain disabling disorders of the collagen system or the central nervous system, which also occur in the young. Despite newer hormonal therapies, the problem of rheumatoid arthritis is as great as ever. Brilliant results have been reported from time to time from the use of numerous drugs in the treatment of multiple sclerosis, but these have gone by the wayside, one by one. Many more clinical examples are available to demonstrate the paucity of definitive measures

From the Physical Medicine and Rehabilitation Service Veterans Administration Hospital, Bronx, New York.

* See Reference 1.

in the treatment of prolonged illness, as antibiotics are in the treatment of the infections. Thus preoccupation with the disease process, while of much interest from the research point of view, is often of little immediate value to the patient. For lack of definitive therapy, nonspecific supportive measures have been the order of the day. The most frequently used therapeutic tool has been bed rest. Yet bed rest has been compared to a drug of addiction with some definite indications but toxic in overdoses and even fatal on occasion (Arnott).

Two attitudes can be developed in response to these problems. One is that of therapeutic nihilism; the second is that of rehabilitation. The latter viewpoint recognizes that although much has been lost through disease and disability, much may remain in terms of trainable reserves. Working in the more or less broad area which remains between the losses and the reserves, and using activity as a therapeutic tool, rehabilitation attempts to develop the individual's maximum residual functional capacity.

Having suggested the increasing need for rehabilitation in the management of prolonged illness, definition of rehabilitation as a specific medical program is in order. The process of medical rehabilitation has been designed to lessen or prevent the deleterious effects of inactivity, to minimize disability, and to train the patient with residual permanent disability in the technics of overcoming handicaps (Abramson and Ebel). This definition outlines the problems as being those of disuse, disability, and handicap and suggests treatment in terms of prevention, correction, and training.

Disuse and Its Prevention

When the human organism is put to rest for prolonged periods of time, it adapts itself to the new functional requirements, and metabolic changes occur in response to the reduction of stresses placed upon it. Among these many changes which occur in various tissues and organ systems is reduction in muscle size and power, atrophy of bone, shortening of fibrotendinous structures and reduction in the capacity of the vascular system to transport blood.

A muscle responds to activity by maintaining a level of bulk and power commensurate with the amount of work it is called upon to do. This general relationship explains the large muscles of the athlete and the flabby musculature of the chronic invalid. The defect in the build up of tissue protein while at bed rest resulting in a negative nitrogen balance is due to the loss of certain stresses which act as stimuli for the anabolic phase of protein metabolism. In muscle, reduction in the work of contraction means the loss of one such stimulus. In bone, reduction in weight bearing means the loss of another. Bone is essentially a protein structure with the specific property of retaining calcium. When weight bearing stress is reduced, protein matrix is lost and calcium pours out of the bones, finally to be excreted in its largest part by the kidneys. The high calcium content of the urine is a predisposing factor for the formation of calculi which has such a high incidence in patients at bed rest (Abramson, 1948).

At the same time as the bones and muscles are undergoing atrophy, collagenous structures are shortening, for the primary property of collegen is to continuously shorten, unless frequently stretched. This tendency to shorten and, therefore, to the formation of contractures is especially marked in the presence of paralysis. The deformity produced by the contracture will hold the joint in such a way as to maintain certain muscles in an overlengthened and others in an overshortened position for long periods of time. Muscles which are maintained in the overlengthened or overshortened positions have a poor recovery potential.

Muscle blood flow can increase as much as ten or more times in response to muscular contraction. Reduction in muscular contraction permits a decreased state of muscle blood flow and a sluggish venous return. To this phenomonon the high incidence of phlebothrombosis during bed rest has been attributed. Besides this, the sluggish transport of blood results in syncope when reassuming the upright position. These are a few examples of the deleterious effects of bed rest. Their prevention is possible with the application of some very simple physical measures such as exercise to prevent contracture, active exercise to prevent venous thrombosis, exercise against resistance to maintain bulk and power, and weight bearing by the use of braces or tilt table to prevent bone atrophy. Without the use of resistive exercises and weight bearing, protein malnutrition will occur despite the adequate intake of that foodstuff.

Disability and its Correction

The correction of disability, or more properly stated, its minimization, is of all the facets of rehabilitation the one which is most easily understood in the traditional medical sense. The immobilization of a fracture to promote union, the transplantation of a tendon to permit pinching

when opposition of the thumb is lost, the digitalization and mercurialization of a patient to bring him out of cardiac failure, the fusion of a joint to halt disease or to render it stable or to eliminate excessive pain on motion, the replacement of a limb by an artificial prosthesis, or the use of a brace to substitute for the supportive action of muscle lost through paralysis are but a few examples of the role of medical and surgical technics which are used to help improve function in the disabled. But function does not flow from the end of a scalpel or from the tip of an injection needle, nor does it spontaneously occur with the application of inert wooden and metal devices. These technics are only of value to the patient when they are employed to increase the potential for functional training. In this sense, the physician and surgeon play their roles in aiding the process of rehabilitation.

HANDICAP AND THE TRAINING TO OVERCOME IT

While disability is what the person has — such as the loss of limbs — handicap is the environmental obstacle which he faces by reason of his disability. For example, a bilateral lower extremity amputee is unable to walk unless his disability is minimized by replacing his missing limbs with prostheses, and unless he is trained in their use. Thus, it becomes obvious that the disabled person need not be handicapped.

The principal handicaps created by physical and mental disability lie in the social and economic spheres. The ideal goal of treatment is to send the patient home capable of caring for himself completely, and to return him to gainful employment. This goal is not always possible. As a matter of fact, it is extremely difficult to return the elderly disabled person to employment. Therefore, lesser rehabilitation goals must be accepted. These lesser goals may be referral of the patient to a sheltered work shop or for home bound work. Even the minimal goal of teaching the person to be a better custodial patient at home, or in an institution, is of value. In this way, rehabilitation includes the smallest social unit concerned with the patient — his family.

After the disability has become established, the patient is evaluated from the point of view of what he could or could not do and an estimate is made of his reserves. He is then taught to take care of himself, to dress himself, to eat, and to handle his own toilet needs. He is trained to ambulate, if possible, using prostheses, crutches and braces if necessary, or through the development of substitutive movements. His personality is evaluated with special reference to his intelligence, interests, and aptitudes. If his disability makes return to previous employment unfeasible, prevocational exploration and selective job placement are undertaken. His family is oriented as to how much or how little assistance the patient will need when he returns to his home. These are but a few details of the training to overcome handicaps. Other specialized forms of training, such as speech therapy in the aphasic, and the training of the blind in cane ambulation, Braille, and handicrafts, are supplied as needed. This program requires the integrated use of many skills and resources besides the physician and surgeon. The psychiatrist, clinical psychologist, social worker, physical therapist, occupational therapist, physical educator, recreational worker, vocational counselor, speech therapist, blind therapist, industrial arts instructor and educator, are employed as needed. Without the aid and close cooperation of industry, welfare and other community social agencies, it would be difficult to carry rehabilitation to its successful completion.

Because of the use of so many talents and resources, the patient will become confused unless the physician retains his interest and leadership in this team approach towards rehabilitation. For after all the disabled patient is the responsibility of medicine up until the time that he is returned to society functioning at his maximum possible capacity.

SUMMARY

Medical rehabilitation in prolonged illness is concerned with the prevention of disuse, the minimization of disability, and the retraining of the handicapped. It uses activity in its various forms as a therapeutic tool. It is medicine's answer to its responsibility for the physical, mental, social, and vocational problems created by disease.

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Physical Medicine and Rehabilitation Methods in the Treatment of Psychiatric Patients

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As stated by Dancik, "It is the goal of medical rehabilitation to keep the neuropsychiatric patient in motion and in continual contact with reality; to provide the activity which will assist all other therapeutic services of the hospital in restoring the neuropsychiatric patient to a social medium and, if possible, return him to community life in the best possible physical and mental condition, prepared to adjust successfully to social and vocational pursuits."

The proper use of all facilities for the total rehabilitation of the psychiatric patient should be encouraged by all who come in contact with him in any way. We have found this particularly important in the management of the psychiatric patient requiring surgery of any type. An alert, cooperative, ambulatory patient, of course, is easier to treat and less subject to postoperative complications than an apathetic "bedridden" person. Also, a patient confined to bed by a physical disability requires specific measures to prevent physical and mental deterioration. (A detailed description of the methods used at the Dayton State Hospital is to be published elsewhere.)

Physical medicine and rehabilitation methods, therefore, play a many sided role in the treatment of the psychiatric patient.

I. Physical Therapy

Physical therapy in its narrowest sense is used in two chief ways:

A. To assist in the treatment of the mental illness itself, and

B. To assist in the treatment of associated or related physical disabilities.

Direct Treatment

One of the most valuable and widely used procedures is *hydrotherapy*. Some general principles in the treatment of mental patients are especially important in the application of this form of therapy. As well stated by Overholser, patients in mental hospitals show little difference from patients "outside." "They are more susceptible to 'intangibles,' such as atmosphere, personality, attention to their needs and interest shown in them," but "this difference is only one of degree. Occasionally they are less cooperative than the 'outside' patients, occasionally resistive, but many are highly cooperative and deeply appreciative." Overholser also emphasizes, as we have noted, the importance of the environment, such as the value of pictures, curtains, mirrors, and, where possible, the presence of birds or an aquarium. In working with "resistive" patients it is necessary to remember that often the lack of cooperation is due to overwhelming fear, which the patient is unable to control. Often the patient who appears to be actively hostile or completely unaware of his environment is entirely cognizant of the situation and embarrassed and terrified by his inability to control his speech and actions. These patients later may relate in minute detail things that occurred during their illness and express great gratitude toward those personnel who remained calm, friendly, understanding, and sympathetic despite their "disturbed" or negativistic behavior.

Hydrotherapy may be used either for sedation or for stimulation. The most commonly used method of *sedative* hydrotherapy is the continuous *tub*. The water is kept at 93–96°F (34–36°C), which is nearly skin temperature. The optimum duration of each treatment is probably about 3 to 4 hours. Older authorities often stated that the continuous tub could be used for "days," but there are several disadvantages to prolonged tub baths. As noted by Nelson and Erickson, patients kept in tubs for prolonged periods are apt to regress because of lack of time for other activities, including other forms of treatment. Patients often sleep in tubs or packs, and are, therefore, apt to be wakeful at night. Most patients like the tub therapy, which would usually be contraindicated for one with a morbid fear of drowning. Some patients become actively resistive when the canvas

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tub cover is placed as it gives them an impression of imprisonment; this is avoided by the loose application of a sheet instead. The purpose of hydrotherapy, particularly when packs are used, must be carefully explained to the patient, lest he interpret it as a punishment rather than an aid to recovery. *Packs* require less equipment and are also widely used for sedation. They consist of sheets wrung out in water at 65°F (16–20°C), covered with blankets. The treatment usually lasts 2 to 2½ hours. There is an initial peripheral vasoconstriction because of the cold sheets, followed by reflex vasodilitation, because the blankets prevent the escape of body heat. The patient is, therefore, soon in a warm neutral environment similar to the continuous tub. It is considered more dangerous than the properly regulated tub because of the possibility of collapse or "heat stroke."

The use of *swimming* as a newer type of sedative hydrotherapy has been well described by Nelson and Erickson. First used for this purpose in a Veterans Administration hospital in 1947, it consists of prolonged free-swimming periods in a pool at 90°F (32°C). The patients swim and play carefully supervised water games for 2½ hours once or twice daily. They are out of the pool for 10 minutes each hour to rest, smoke, and use the toilet. This therapy was used for markedly hyperactive and assaultive patients and completely did away with a former pressing need for additional pack rooms in that institution. The patients were tired and ready to sleep at night, thus avoiding the use of sedatives. A marked decrease was noted in the number of wet packs, continuous tubs, restraints, and in the number of disturbances and assaults by disturbed patients. Swimming would be contraindicated in the presence of debility from age or chronic disease, or if acute infections, convulsive disturbances, or incontinence are present. It should not be used for new patients whose tendencies are not yet known, or for those on insulin therapy.

In the treatment of the mental illness itself, hydrotherapy is also used for *stimulation*. Streams of water striking the skin produce reflex vasodilitation and increase in muscle tone. This results in a feeling of warmth, relaxation, and increased vitality. Two commonly used forms are the cool needle shower and the Scotch douche which consists of contrasting streams of alternating hot (110°F) and cool (70–80°F) water administered by means of a hose with pressure.

A type of physical therapy less commonly used in the treatment of mental illness is *massage*. Although there are some indications for it, massage for sedation is usually not applicable because many psychotic patients resent handling while they are "disturbed." Stimulative massage, such as the "salt glow" and friction rub are of more value, being used in the treatment of certain depressed and catatonic states.

Indirect Treatment

Physical therapy is of especial importance in the *treatment of associated or related physical disabilities*. For instance, a mentally ill patient with a hemiplegia from a cerebrovascular accident requires proper management to prevent deformity and attain rehabilitation. The goals are similar to those desired for a mentally normal hemiplegic, but the actual methods must be varied to suit the patient. For instance, a patient known to have suicidal tendencies cannot be left unattended to do rope-and-pulley exercises; and a patient with a severe memory defect cannot be expected to carry on exercises without constant guidance. Peculiar to mental institutions are patients with marked flexion contractures or other deformity from remaining in one position for months or years as the result of catatonia. It is surprising how much can be accomplished with the application of simple physical therapy in an atmosphere of friendly interest, optimism, and reassurance. For example, a Dayton State Hospital patient who according to all observers had remained in bed without speaking, with her knees, hips, and elbows flexed for three years is now fully ambulatory, cares for her own needs, and speaks rationally and cheerfully, her only residual physical disability being a slight contracture of the right knee. Physical therapy aids in the prevention or alleviation of decubitus ulcers and muscular disuse atrophy. Various measures including corrective exercises help the patient attain proper posture in walking, standing, sitting, and lying in bed. Physical therapy methods are important in the treatment of the peripheral vascular disturbances seen so frequently in the psychotic patient who may have superimposed on arterial or venous insufficiency the effects of sitting or standing in one position for a long period of time.

II. Recreational Therapy

Recreational therapy serves four main functions in the rehabilitation of the psychiatric patient:

A. It aids in improving the psychiatric status by providing gradual transition from the preoccupation with self, characteristic of the patient

with mental illness, to participation as part of a team or group.

B. It helps the patient attain and maintain good physical condition through active sports.

C. It makes the hospital stay more enjoyable and acceptable.

D. Recreational activities help provide acceptable outlets for pent-up emotional tensions.

J. E. Davis reported a 67 per cent reduction in the number of tubs and packs required when a group of combative, destructive patients not responding to other forms of therapy were placed on an individualized program of exercises and sports which allowed a gradual progression from individual to group activities.

III. Occupational Therapy

Occupational therapy may be diversional or prevocational in type. *Diversional* occupational therapy may be very simple at first, progressing from merely looking at things (a real accomplishment in the management of the extremely withdrawn patient) to making a complete product; from working individually to working with others. It has four important contributions in the care of the psychiatric patient:

A. It increases and maintains the patient's interest in his environment.

B. By careful selection of activities and materials specific psychiatric needs can be met. For instance, a repetitious quiet task with pale colored materials may help relax a very tense patient. Working with bright colors helps combat lethargy. Ripping material or hammering helps relieve tension in acceptable ways.

C. Occupational therapy helps make the hospital stay more acceptable and enjoyable.

D. It may serve as an introduction to fundamental work habits, such as planning, doing, and completing a task. There is resulting pride of achievement, with an increased sense of personal value. Patients respond better when they realize their project is to serve some useful purpose, such as making pillowcases for the ward, or decorations for a hospital entertainment.

Prevocational activities are used for testing and training in specific skills which may be used as components of a trade.

For the sake of completeness, *music therapy* and *art therapy* will be mentioned at this time. Actually, each is a multiphasic program able to help provide stimulation to the depressed patient, and relaxation to the overly tense person, as well as aiding in social adjustment and including diversional and prevocational aspects.

IV. Vocational Therapy

As the patient's interests and abilities become known, he gradually progresses into real work situations with later transition to a sheltered workshop in the community and then actual employment. Most large mental hospitals have on their premises opportunities for many types of work. This would include assisting in the library, kitchens, laundry, farms, maintenance shops (electrical, carpentry, painting, and plumbing). The transition from living and working on the hospital grounds to employment and then residence elsewhere is difficult for the long-hospitalized patient. Sheltered workshops in the community, such as the Goodwill Industries, help greatly in this respect.

In order to achieve successful vocational rehabilitation of psychiatric patients, proper testing and follow up is essential. Rennie estimated that 30 per cent of psychiatric clinic patients have vocational problems which are coincident with or the result of emotional problems. He estimated that in 1950 about 15 per cent of posthospitalized mental patients were in need of vocational rehabilitation services. In 1946 to 1948 about 95 per cent of these failed to obtain such services, according to Rennie.

In a "rehabilitation workshop with prevocational facilities," Kalson, in Pittsburgh, worked with mental patients who had been severe employment problems and stated in 1953 that almost 50 per cent of those undergoing the full range of services had been successfully rehabilitated, i.e., maintained a minimum of six months in regular employment or satisfactory performance in training.

White, in England, found 50 per cent satisfactory industrial rehabilitation of psychiatric patients in a one-year follow-up group. Woodwork of one kind or another seemed to be the occupation at which these psychiatric patients did best, with higher proportion of successful placement after training in this trade than any other. He observed that occupational prognosis is best with high former level of occupational skill and previous stability in employment. It was interesting to note that the incidence of previous mental hospital treatment was higher in the group of patients with satisfactory rehabilitation than in those with unsatisfactory adjustment.

V. Educational Therapy

Another adjunct in the rehabilitation of the psychiatric patient is educational therapy. This consists of specific training in certain intellectual

skills, ranging from merely reading and writing to learning foreign languages, mathematics, or other subjects with the purpose of enabling the person to have a feeling of importance and accomplishment, to overcome inferiority feelings from educational deficiencies, and to make him more readily employable in the community.

VI. Social Therapy

When a patient returns to his home after a prolonged stay in most mental hospitals, he finds himself with a double social handicap. He finds ordinary conversation and social activities strange, having spent months or even years on wards consisting of patients and attendants of his own sex only, and having little or no opportunity to observe social "niceties." This, of course, is particularly handicapping to women who return to homes of average or above average economic level. The second difficulty is the attitude of the people in his community, who may be afraid of him, or at least prone to consider him "different." Both of the problems have been greatly alleviated by the social therapy program, as developed by its founder at the Dayton State Hospital. It is purposely managed entirely by lay volunteers from the surrounding community. These are clubwomen, housewives, and men and women of many types of occupations. They arrange programs the most important part of which is the opportunity for the patients to sit at tables of not more than four patients to a host or hostess for "just ordinary conversation," although part of each program is also devoted to some type of formal entertainment and refreshments. No badges or uniforms distinguish the patients from the visitors. In selecting patients for this type of therapy preference is given to those who are expected to be able to leave the institution in the near future. The patients benefit from the opportunity to go to a "party" where they meet people who come to visit them with no apparent objective other than friendly, neighborly interest. The hosts in turn benefit from their new acquaintanceship with mental patients among whom they are often surprised to find their old friends, teachers, and former acquaintances. On their own volition, these hosts and hostesses do much to aid the patient's return to and acceptance in the community.

Summary

In summary, physical medicine and rehabilitation methods are exceedingly important in the effective care of the mental patient, whether his disability be purely psychiatric or whether there are associated medical and surgical problems.

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Assistive and Adaptive Apparatus for Upper Extremities

Robert L. Bennett, M.D., M.S., and Hazel Royall Stephens, M.A.

Feeders

Introduction

The term "feeder" is used to designate all types of apparatus designed to bring the hand toward the head by means of a "see-saw" device under the forearm and/or elbow. The term "feeder" is somewhat misleading as this apparatus is used not only to assist the patient to feed himself but also to carry out many other activities esssential to personal hygiene, vocational endeavor, and recreation. The origin of this device is not known to the authors of this paper. Prior to 1943 "feeders" used at Warm Springs Foundation consisted of an aluminum cradle for the forearm supported by a single hinged metal rod passed through holes in a table or in the lapboard of a wheel chair. This permitted limited flexion and extension of the elbow as the shoulder was moved, and some horizontal movement of the hand and forearm as the trunk was shifted. Because of its limitations, this early type of feeder was not practical for the severely involved patient. The present feeder with its several variations was an outgrowth of the use of the overhead sling in the early care of the patient with severely involved upper extremities. High lapboards and overhead slings were first used at Warm Springs Foundation as part of early convalescent care in 1942. In the following year a forearm cradle with an elbow support attached to the strap of the overhead sling —replacing the elbow and wrist cuffs—was first used to enable the patient with no elbow flexion power to bring his hand toward his mouth. This suspension type of feeder, with but minor modifications, is still commonly used.

Feeders are designed primarily to assist the patient to bring his hand toward his head, but their design also permits side to side and rotary movements so the hand can be brought into position of use. In general, a feeder is not used until time and adequate treatment indicate that the patient has little chance of recovering functional use of his upper extremities through voluntary muscle power. It is rarely used when only one upper extremity is involved. In selected and closely supervised cases it may be prescribed to stimulate use of weakened muscles during early convalescence as part of the program of muscle reeducation. It is not intended to take the place of orthopedic surgery, but it must be remembered that most of the patients so severely involved that they require feeders have insufficient muscle power remaining to profit from flexorplasty or arthrodesis. Many are so limited from a respiratory and/or cardiac standpoint that they cannot be considered safe surgical risks even if surgery is indicated.

The feeders outlined below are those found to be useful through extensive trial at Warm Springs Foundation. In the last five years alone 737 feeders have been prescribed for patients at Warm Springs. It must be emphasized that we make no claim of their superiority over other apparatus designed for the same purpose. We do feel that these feeders are practical and sturdy, are reasonably easy to construct and adjust, and seem to suit our demands and facilities better than any other type that we have tried.

Types of Feeders

There are four types of feeders named according to their base support.

I. Suspension (see figure 1)
II. Stand (see figure 2)
III. Clamp
  A. C-Clamp (see figure 3)
  B. Ball-bearing C-Clamp (see figure 4)
  C. Round Clamp (see figure 5)
  D. Ball-bearing Round Clamp (see figure 6)
IV. Body Type (see figure 8)
  A. Belt Base
  B. Cellulose Acetate Jacket Base
  C. Corset Base

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Suspension Feeder

This type is usually suspended from a metal rod similar to the upright supporting an overhead sling. This rod may be attached to the back of a wooden wheel chair, portable wheel chair, regular chair, chaise lounge, baby's high chair, or can be clamped to a table or desk. The feeder may be suspended from a track over a counter surface. This type of feeder is most commonly prescribed for children, or as a training feeder before another type is ordered for permanent use.

Advantages

1. It gives greatest assistance of any type feeder in all ranges of motion.
2. It is easy to set up and adjust.

Disadvantages

1. Overhead bars, suspension spring and straps are very conspicuous.
2. Overhead bars and suspension must be removed to put chair in car.
3. Motion may be too free for some patients.

Parts of the suspension feeder (see figure 1)

1. Overhead rod
   $\frac{3}{8}$" cold rolled iron rod usually 5 feet in length. One end fits into a round clamp on the lateral surface of the back upright of a portable chair. (This may be purchased by permission of the Warm Springs Brace Shop from The Aluminum Company of America, 1800 Rhodes Haverty Building, Atlanta, Georgia, or any local branch — die #42092.) The rod is bent at a right angle approximately 22" from upper end.
2. Spring
   Light expansion coil spring is about $\frac{1}{2}$" in diameter and 8" in length. The tension needed depends on weight, length and muscle power in the extremity and can only be determined by trial and error. Loop at end of spring fits on the overhead rod.
3. Leather strap with D-ring
   Strap attaches spring to the cage of the feeder. This strap is approximately 2 yards long. Multiple holes are punched 1" apart for adjustment at buckle.
4. Cage of feeder
   $\frac{3}{16}$" monel metal rod is bent in the shape of an elongated bail or bucket handle. The two ends, bent at right angles, fit into the channel of the feeder.

Figure 1. Suspension feeder
A. Channel stop
B. Round Clamp

5. Channel
   Channel is made of $\frac{1}{4}$" inside diameter monel metal tubing running horizontally across the bottom of the feeder. It is approximately 4" long and welded to a flat piece of monel metal that is threaded for two Phillips screws of $\frac{3}{10}$" diameter.
6. Stops (see detailed description under "stops")
7. Forearm Support (see detailed description of "cradle type" forearm support)

Stand Feeder

This is a portable feeder that can be placed on a table or a desk. This was the first portable-type feeder we designed and originally was intended for ambulatory patients who did not need a wheel chair. The clamp feeder has almost completely replaced this type.

Advantages

1. It is portable.
2. It is less conspicuous than most other types of feeders.
3. It is easily moved about on a flat surface for greater usefulness.

Figure 2. Stand Feeder
A. Circular aluminum dial
B. Cradle type of forearm support
C. Adapter
D. Height adjustment collar

Disadvantages

1. It may tip easily.
2. It is usually too high for children to use.
3. It requires more muscle power and control than suspension type feeder.

Parts (see figure 2)

1. Base
   Base consists of a round piece of ¼" aluminum, 7" in diameter. For a child, it can be 1½" smaller. Base must be larger if the upright is very high to prevent tipping. If the swivel arms are too long, it may also tip. It is important to have a wide, firm base.
2. Uprights
   The upright is a sleeve of ¼" inside diameter monel metal or stainless steel tubing several inches high. Tubing is attached to the base by a 10-32 oval-head Phillips screw. A ¼" or ⅜" ball-bearing cylinder can be used in the upright for freer motion.
3. Forearm support
   Cradle with post. This is the same as the suspension cradle except that it has a hinge joint underneath in place of the channel, and a ¼" or ⅜" monel metal post several inches long with washer at top (see figure 2).
4. Adapter (see figure 2)
   The adapter is used to fit the suspension cradle to the stand type. It serves the same purpose for the clamp type, or body-type feeders. The post of the adapter is a ¼" monel metal rod soldered in the center of a ½" x ⅛" monel metal yolk. The width of the yolk is determined by the width of the channel that is attached to the cradle. Cradle is removed from cage and placed in the adapter. A ¼" thumb screw holds it in place. If the patient does not have a suspension cradle, there is no need for the adapter. The cradle should be made with a hinged post underneath.
5. Swivel arm
   Swivel arms are the connecting links between the forearm support and the base or attachment of the feeder to chair or table (described under C-Clamp). They are numbered according to their proximity to the base. Seldom do we use swivel arms with the stand type feeder. If one is necessary, care must be taken that it is not so high or does not extend out so far that the base tips when the forearm is placed in the cradle.
6. Height adjustment collar (described under "C-Clamp feeder")

C-Clamp Feeder

This feeder is designed to be clamped to the edge of a table, desk, or the arm of a wheel chair or high chair.

Advantages

1. It is small and compact, and thus more portable.
2. It is the least conspicuous of all types of feeders.
3. It is more stable than the stand type feeder.

Disadvantages

1. Patient may need help in applying clamp.
2. Range of motion may be limited in horizontal abduction and adduction and in extension.
3. Requires more muscle power and control than suspension type feeders.
4. May mar the surface to which it is clamped.

Parts (see figure 3)

1. Clamp
   The clamp is made of a piece of ⅛" x 1¾₆" monel metal bent into C shape. The height is 2¼" and the top and bottom arms

are 1½" each. A wing-nut bolt is tapped through the bottom arm. A flat piece of ⅛" monel metal is riveted at top of the bolt; ¼" tubing about 2½" long is soldered to body of the clamp to hold the post of the feeder. The tubing should not extend above the top arm of the C-clamp.

2. Swivel arm
   Swivel arms are named according to their proximity to the base. One, two, or three of these arms may be used. They are made of ¼" or ⅜" monel metal or stainless steel rod of varying length with a 1" piece of ¼" or ⅜" diameter tubing soldered to the end. The first arm fits into the tubing attached to the C-clamp. The cradle post then fits into the swivel-arm tubing. A short ¼" or ⅜" ball-bearing cylinder at the distal end of the first swivel arm is sometimes preferable to the simple cylinder.
3. Forearm support (described under "forearm support")
4. Adapter (described under "stand feeder" — see figure 2.)
5. Height adjustment collar (see figure 2) A sleeve of ¼" or ⅜" inside monel metal or stainless steel tubing ¼" long is used. A nut is soldered to this—then a hole is drilled and retapped all the way through. An 8-32 thumb screw (8 size 32-threads to 1 inch) or a hollow head Allen screw holds it securely on the rod. The height of the feeder can be changed with this collar when determining correct height of the person's own equipment. This makes feeder easily adjustable to various heights of working surfaces or chairs.
6. Stops for adapter (described in "stops")

Ball-bearing C-Clamp Feeder

This feeder is similar in purpose and use to the simple C-clamp type described before.

Advantages

The ball-bearing cylinder eliminates binding and is smooth and free in action, otherwise the advantages are the same as for the simple C-clamp type.

Disadvantages

1. Heavier than simple C-clamp
2. Ball-bearing cylinder may make range of motion too free and uncontrollable. This can be determined only by "trial and error."

Parts (see figure 4)

1. Ball-bearing C-clamp
   ¼" or ⅜" ball-bearings (Boston Nice Flanged Radial Bearings, Catalog #5561 and #5543) are fitted into top and bottom of a stainless steel tube ¾" or 1⅛". This whole cylinder is then soldered to the C clamp.
2. Swivel arms (described under C-Clamp Feeder) one, two or three may be used.
3. Forearm support (described under "Cradle Type" Forearm Support)
4. Adapter (described under "C-Clamp Feeder" — see figure 2)
5. Height adjustment collar (described under "C-Clamp Feeder")
6. Stops for adapter (described under "C-Clamp Feeder") Precaution — Do not have cradle too high.

Round Clamp Feeder

A round clamp is the base of this feeder. It is attached to the upright of the back of a portable wheelchair.

Figure 3. C-Clamp Feeder
A. Cuff forearm support
B. Curved swivel arm

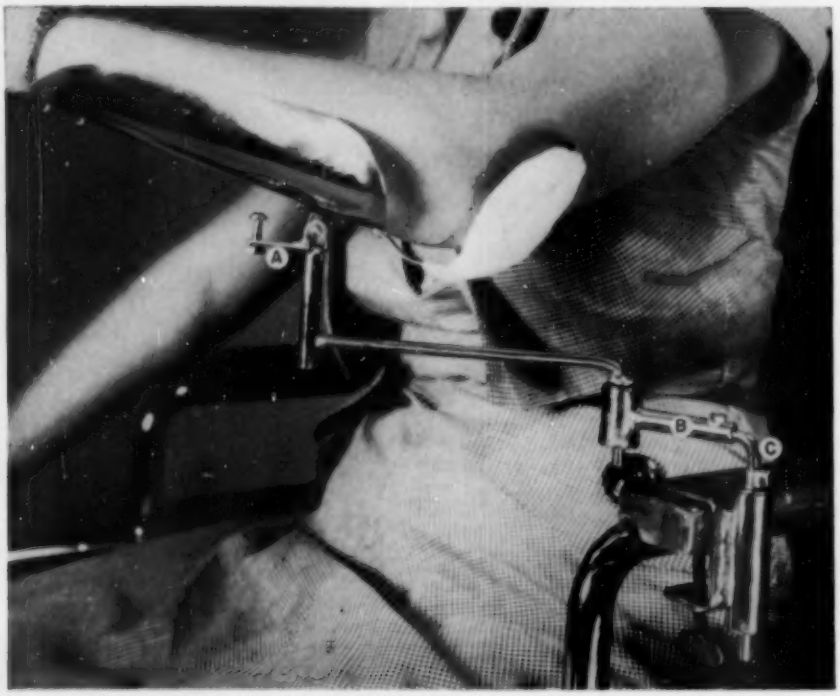

Figure 4. Ball-bearing C-Clamp Feeder
A. Anterior stop for post
B. Adjustable ¼" swivel sleeve with ¼" ball bearing on end.

Advantages

1. Eliminates overhead bars.
2. Is less conspicuous.
3. Is more portable.
4. Is easier to get into and out of than suspension type.

Disadvantages

1. Is more difficult to adjust than suspension or C-clamp.
2. Requires more muscle power to control.
3. Range of motion is somewhat limited.
4. Requires more equipment to determine if patient can use this type.

Parts (see figure 5)

1. Round clamp
   This clamp fits any portable chair with tubing back uprights. The clamp may be purchased by permission of The Warm Springs Brace Shop from any branch of Aluminum Company of America — die #42092.
2. Swivel arms
   These have been described before; however, a ⅜" rod is usually used for the first swivel arm and ¼" for the second. If a freer joint is needed between swivel arm #1 and #2, the cylinder that holds arm #2 often has a ball-bearing cylinder similar to but shorter than the ball-bearing cylinder on the C-clamp. The cradle may also be held by a ball-bearing cylinder. All of this is determined by the patient's ability to obtain optimum range of motion with the least effort.
3. Stationary arm (see figure 5)
   Occasionally it is advisable to bring the first joint farther forward than usual. This is usually necessary if there is an insert for proper positioning in the chair—or if the portable chair back is at much of an angle. Stationary arms can assist in putting the ball-bearing joint closer to the

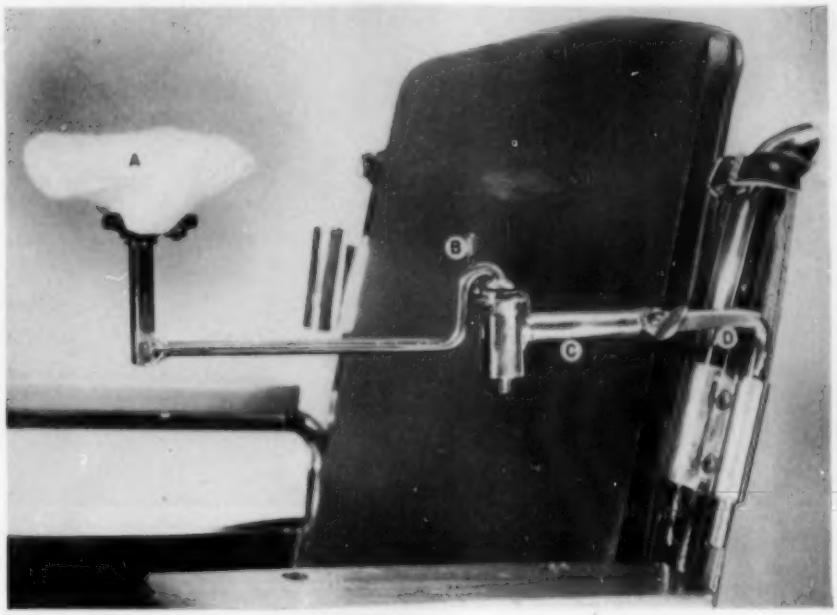

Figure 5. Round Clamp Feeder
A. Flying saucer forearm support
B. ¼" ball-bearing stop
C. ⅜" adjustable sleeve with ball-bearing cylinder on end.
D. Adjustable straight ⅜" stationary rod

body. This is done by locking a ⅜" swivel arm in the simple wheel chair clamp. The ball-bearing joint at the end of #1 swivel arm is then the first joint. The length usually varies from 4" to 6".

4. Forearm support (described under "Forearm Support")
5. Adapter for cradle (described under "C-Clamp Feeder" — see figure 2)
6. Stops for ball-bearing cylinders (described under "Stops" — see figure 6)
7. Stops for posts (described under "Stops"— see figure 4)

Ball-Bearing Round Clamp Feeder

This feeder is similar to the simple round type except that it has a ball-bearing cylinder applied to the clamp to hold the swivel arms. This is the most practical of all wheel chair type feeders.

Advantages

1. Has all the advantages of the round clamp type but is much easier to operate.
2. Has greater range of motion for those with little muscle power (next to suspension).
3. More adjustments are possible for controlling specific motions.

Disadvantages

Has the same disadvantages as the simple round clamp type. In addition it may be too free in its motion for adequate control by some patients.

Parts (see figure 6)

1. Base
   A ⅜" ball-bearing cylinder as described under ball-bearing C-clamp is attached to a round clamp. Swivel arm #1 fits into this cylinder. In a physical therapy department where equipment is changed from one patient to another in determining types to be used, it is advisable to have a means of angling the ball-bearing cylinder in its relation to the round clamp. This can be done by tapping the cylinder for two screws. It is necessary to know this angle

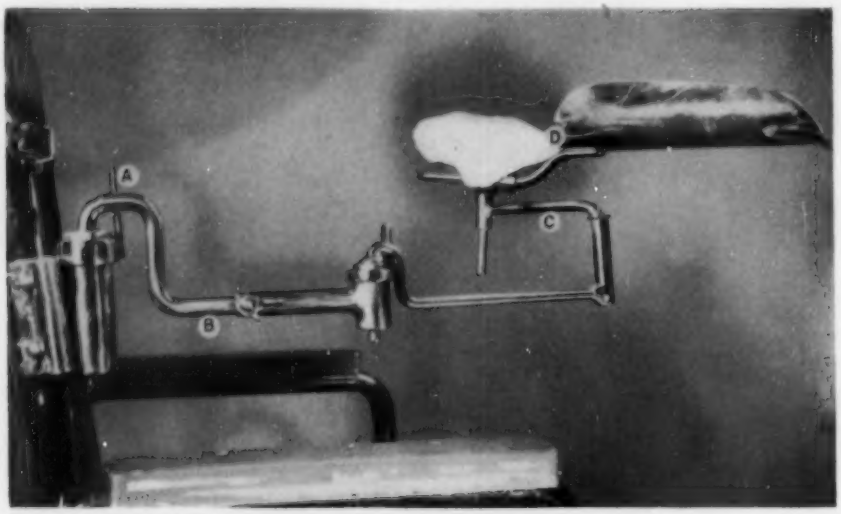

Figure 6. Ball-bearing Round Clamp Feeder
A. ⅝" ball-bearing stop
B. Adjustable ⅝" swivel rod with a drop
C. Straight #3 swivel arm
D. Combination forearm support

before the patient's permanent feeder is made.

2. Swivel arms (previously described)
   The first is a ⅜" diameter rod bent through three 90 degree angles (see figure 6). The second arm can be ¼" or ⅜" in diameter. The diameter is determined by the size of the support that holds it (i.e. ¼" or ⅜" tubing or ball-bearing cylinders) as well as by the weight and the length of the arm. Children usually have a ⅜" first swivel arm with all others being ¼". Adults with long heavy arms require a ⅜" for all swivel arms. Obtaining the correct length of each swivel arm is essential to a properly functioning feeder.
4. Forearm support
   Any of types described under "Forearm Support"
5. Adapter for cradle
   Previously described under C-clamp feeder (see figure 2)
6. Stops
   Previously described under "Stops"
7. Height adjustment collars
   Described under C-clamp. Used on post of any swivel arm or the post below cradle (see figure 2)
8. Tubing height adjuster
   This is usually used to determine correct height of tubing at end of swivel arm before placing brace shop order. However, a patient who needs to vary the height for proper working level may require this as a part of his equipment. A 2" (¼" inside diameter) and a 2½" (7/16" inside diameter) stainless steel tubing are soldered end to end. A nut to hold a height adjustment screw is soldered on the 7/16" tubing. This adjuster fits over tubing at end of swivel arm and allows for height adjustments from 2" to 4".
9. Stationary arm
   Described under "Round Clamp Feeder"

BODY-TYPE FEEDER

This feeder is attached directly to the patient by means of a corset, jacket, or belt. Its obvious value is to the patient with severe weakness in the upper extremities, but with adequate strength in his trunk and lower extremities to sit down, stand up, and move about in a safe and practical manner. A feeder thus attached to the patient's waist has distinct advantage over a stand or C-clamp type that must be moved by hand from place to place. Early in 1953 we first

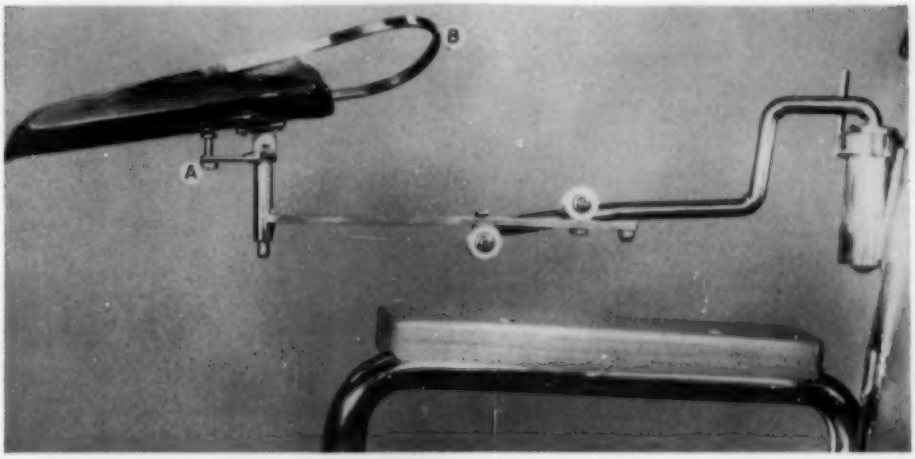

Figure 7. Swivel with Extension Rod
A. Anterior stop for post
B. Bail type elbow support

attached ball-bearing cylinders holding feeders to heavy leather belts. These belts were made over a plaster mold of the patient's trunk. Regardless of how these belts were made, the weight of the patient's arms in the feeder apparatus was uncomfortable. A cellulose jacket was much better but more difficult to make. Finally a reinforced corset was used as the base, and at this time seems to be most practical. To date fourteen patients are using the corset base body-type feeder successfully.

Advantages

1. The body-type feeder supports the forearms and hands in a functional position whether the patient is sitting or standing, and moves with the patient when he walks about.
2. The corset as a base for feeders has several advantages:
   a) It can be made to fit comfortably.
   b) It can be cleaned easily.
   c) It can be worn inconspicuously under normal clothes. Simple button-hole openings permit easy access to the ball-bearing cylinders.

Disadvantages

The weight of the apparatus and the upper extremities may cause postural strain.

Parts (see figures 8 and 9)

1. A simple well fitting corset
   Vertical aluminum bars are attached by rivets to the medial stays and horizontal aluminum bars attached to the 4 stays by rivets —24st. aluminum is used for the vertical and horizontal bars.
2. A flat metal channel (½" x ⅛" inside diameter steel approximately 4" long)
   This is attached horizontally to the vertical bars by 4 $^{8}/_{32}$ Phillips screws. The placement on the bar depends on the length of the trunk. Allen set screws are used at each end of the horizontal channel to secure the stationary arm.
3. The stationary arm
   A ¼" ball-bearing cylinder is soldered to ⅛" x ½" stainless steel flat rod that fits into the horizontal flat channel. This rod is curved to the contour of the body and length is usually to midaxillary line or a few inches anterior. The ball-bearing cylinder is attached to the end of this rod. Swivel arm #1 goes in this ball bearing.
4. Swivel arms
   Two ¼" diameter swivel arms—#1, with a ball-bearing cylinder is the usual set up. Occasionally only one is used. The length and angle of these are determined by actually trying them. The height of the tubing holding the cradle post is usually longer than for other type feeders, the average is 4" high. The purpose of this is to facilitate clearance of the elbow support on the last swivel arm when necessary. To accommodate for this additional height so

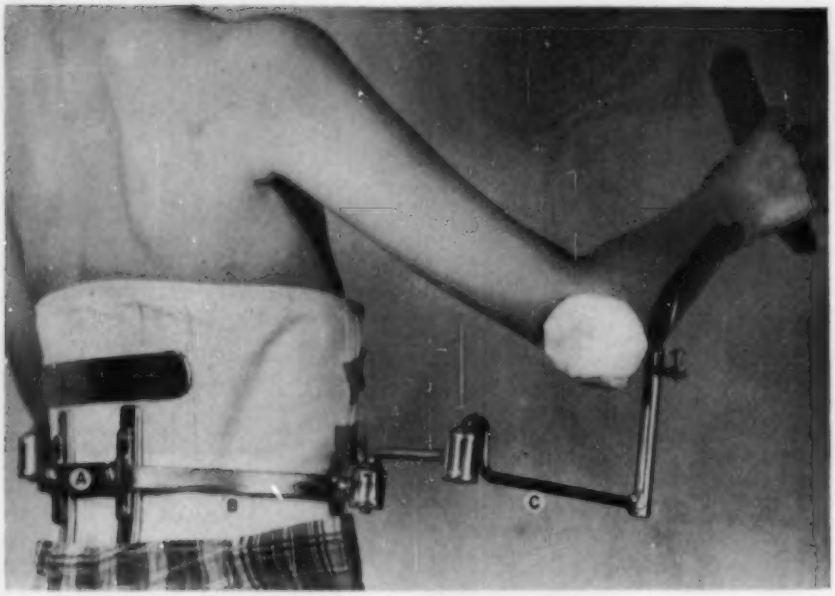

Figure 8. Corset Base Body Type Feeder
A. Flat metal channel
B. Flat curved stationary arm
C. Second swivel arm with drop

the level of forearm and hand is not too high, we put a drop or bend in each swivel arm. The drop is about 1″. First swivel arm is usually 2″ to 3″ long, second swivel arm is usually 4½″ to 5½″ long.

5. Forearm support (previously described)
6. Stops; ball-bearing and posts (previously described under simple wheel chair clamp feeder)
7. Adjustment height collar (previously described)
8. Tubing height adjustment (previously described under round ball-bearing clamp feeder)

Forearm Supports

Parts

1. The cradle is usually the basic support for the forearm (see figure 2)
   a) Trough
   The trough is made of a flat piece of .064 (thickness) 24st aluminum which is curved horizontally to fit the forearms. It extends a comfortable distance from the wrist to about 2″ distal to the elbow. From the center of the trough to the stem are holes ⅜″ apart into which the channel or the post screws can be fitted. These are for fine adjustment in balance.
   b) Elbow support
   Elbow supports are almost always necessary. They are attached to the troughs. They are of several different types:
   (1) A circular aluminum dial with cut out center
   This dial is padded, covered with leather or adhesive moleskin and shaped to fit elbow. It is attached to the trough by a metal screw. This is the type most commonly used (see figure 2).
   (2) A flat metal T-shaped support shaped to fit elbow
   (3) A dial with a ball-bearing joint
   This is a circular aluminum dial with a ball-bearing joint. It allows the hand to more closely approximate the mouth (see figure 13).
   (4) A dial with universal joint

This is a circular aluminum dial with a universal joint. It allows the hand to more closely approximate the mouth (see figure 13).

(5) A bail type
This is a metal rod attached to cage of feeder or to cradle of feeder. It does not limit extension as much as the circular dial (see figure 7).

(6) A leather cuff attached to cradle by a cable and housing
This type helps to eliminate pressure at elbow. If elbow support is uncomfortable or limits extension, it may be possible to eliminate it and still keep forearm in trough by attaching handsplint to trough.

2. Flying saucer
This is a simple horizontal dial support that can be used with any type feeder except suspension or stand type. It is used when patient has some biceps power. The dial is curved and padded for comfort—a post underneath fits into the tubing of the swivel arm (see figure 5).

3. Combination support
Flying saucer with very short trough. This is used when some biceps power is present but patient needs additional support for rest. Allows more freedom than a full cradle (see figure 6).

4. Cuff
2″ wide sheet aluminum .064 cuff lined with leather with a strap and buckle on top and hinge joint and post underneath. This may take place of cradle for some users of stand or C-clamp feeder. (See figure 3)

Feeder Arms

The length and arc of movement of these connecting links between the forearm support and the base of the feeder are essential to smooth and efficient functioning of ball-bearing wheel chair clamp feeders, simple wheel chair clamp feeders, and the C-clamp feeders. The length and adjustments of each arm are determined by "trial and error." Feeder arms can be stationary or swivel. The stationary arm is described in detail under round clamp feeder—swivel arm under type feeder concerned.

A swivel arm with extension rod (see figure 7) has an extension range of approximately 6″ which is comparatively easy to obtain. The disadvantage is that it must be quite high to clear the table surface. It is constructed as follows. A $\frac{3}{16}$″ x $\frac{1}{2}$″ cold rolled steel rod approximately 10″ long slides freely between two pair of $\frac{1}{4}$″ flanged radial bearings which are soldered to a #1 swivel arm fitting into the ball-bearing cylinder. Two of the ball bearings are located at the distal end of the swivel arm and the second pair are 3″ proximal to this. A guide of $\frac{1}{8}$″ x $\frac{1}{4}$″ monel metal is positioned above the distal pair and below the proximal pair to hold the rod in place. A screw stop on the proximal end prevents the rod from being disengaged—$\frac{1}{4}$″ inside diameter tubing or $\frac{1}{4}$″ ball-bearing cylinder is soldered to the distal end of the rod to hold the forearm support. The distance from the shoulder to the elbow in average size persons we find varies from 12″ to 15$\frac{1}{4}$″ and first swivel arm length varies from 6$\frac{1}{2}$″ to 9″. Elbow to hand measurements vary from 8″ to 9$\frac{3}{4}$″ and the second swivel arm from 4″ to 6″. This indicates that some of the department equipment must be adjustable in length. This is done by using $\frac{3}{8}$″ inside diameter stainless steel tubing which fits over the $\frac{3}{8}$″ stainless steel rod—the sides of which are filed flat for securing with thumb screw; $\frac{1}{4}$″ thumb screws are used. Besides various lengths of tubing a department needs tubing with a ball-bearing cylinder on the distal end and some with plain tubing on the end. Figure 14 shows basic $\frac{3}{8}$″ adjustable, interchangeable rods and sleeves needed for a physical therapy department.

Figure 9. Corset Base Body Type Feeder with Patient Dressed

The same is true with corset base body-type feeders. These are $\frac{1}{4}$″ diameter rods, and $\frac{1}{4}$″ inside diameter tubing (see figure 14).

Patient's permanent equipment is never adjustable because it wears and slips. Use adjustable equipment only for "trial and error" fitting in physical therapy department.

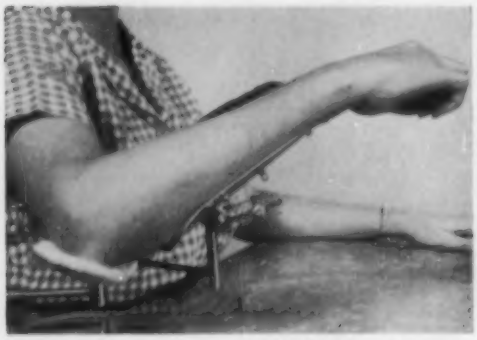

Figure 10. Mechanical Type Supinator with Elbow Flexed

Stops

Stops are used to limit range of motion or to stabilize a joint. Stops used on channel (see figure 1)

A 1" length of 5/8" aluminum rod is drilled to fit over the channel. A section is cut from this sleeve of aluminum according to the range of motion desired. An Allen hollow head screw keeps the stop in place. Thumb screw does not hold well. When both up and down motion must be controlled it has been found easier to use two stops—one placed on either side of the channel; each controls a separate motion.

Stops for adapter

A piece of 1/8" x 1/4" monel metal is bent to fit around the channel with about a 1" projection dropping below the adapter. An Allen set screw (8-32) keeps it in position. Rubber tubing on end of the stop acts as a cushion and eliminates noise. Posterior stop limits upward motion. Anterior stop limits downward motion.

Stops for ball-bearing cylinders

To control horizontal abduction and adduction, or flexion and extension in horizontal plane. The 3/8" stops (used on ball-bearing cylinder — see figure 6) are made from 1/8" x 1/2" piece of monel metal bent to fit around the cylinder. A 1/8" x 1/4" projection 1" long is soldered to this ring. This projection acts as a stop at this joint. Two 8-32 Allen screws screw this ring to the cylinder. The 1/4" stop (used on ball-bearing cylinder—see figure 5) is identical with 3/8" with the exception of 1/8" x 1/4" instead of 1/8" x 1/2".

Stops for posts (see figure 4)

The stop is used when the cradle has no adapter. It is a stationary stop soldered to the post of the cradle. Made from 1/8" x 1/2" monel metal with screw at end to adjust degree of flexion or extension. Posterior stop limits flexion. Anterior stop limits extension.

ADJUSTING FEEDERS

Correct balance of the feeder is an absolute necessity. The criteria for adjusting feeder apparatus depends on purpose of the feeder. If the purpose is to increase the muscle power of the biceps or brachioradialis, the feeder is adjusted to give the muscle an opportunity to work through the desired range.

If the purpose is to increase functional capacity it is adjusted to obtain all function possible in as nearly normal patterns of motion as is feasible with the existing weakness.

In departments where there are a number of patients who will require this type of assistance or adaptive equipment, it is advisable to have as department property enough equipment to actually try the patient in all types of feeders. When the proper type is determined the actual measurements with tracings can be given the orthotist, saving time and expenses.

Specific adjusting

1. Position in chair is important. Patient should have a back support to provide a comfortable upright position. Back support should not limit lateral motion of shoulders and trunk. By all means do not let patient slump into the sagging back of a chair. Slumping limits many of the trunk or shoulder movements that are necessary to control feeders. Sometimes a cushion or padded board is needed to raise a child in his chair enough to have the elbow clear the lapboard as his hand goes to his mouth.
2. Position of forearm support
   a) Move forearm support forward on channel or post (by means of Phillips screws) to obtain increased weight in hand. This is, of course, indicated when it is difficult to get hand down.
   b) Move forearm support backward on channel or post (by means of Phillips screws) to obtain increased weight at elbow. This is indicated when it is difficult to get hand to move toward mouth.
3. Position of support at elbow
   a) Be sure it is comfortable and does not limit any necessary motion. Try different type elbow support if any necessary motion is limited.

b) Elbow support and/or stem may be bent sideways, forward or backward, or in or out, to better position forearm in cradle for comfort or balance.

4. Padding cradle or the dial for comfort and to prevent slipping of the arm may occasionally be necessary. Sponge rubber, adhesive, moleskin or felt may be used. Be careful of pressure at point of elbow—any numbness or tingling should be checked by doctor immediately.
5. Supination assistance apparatus provides a much more normal pattern of motion for any type eating equipment if supination power is absent or not of functional strength. Several different types may be tried:
   a) Band of rubber or dental dam from channel or cradle to handsplint (see figure 12).
   b) Cord and pulley arrangement — Is rather complicated but possible.
   c) Handsplint may be fixed rigidly to cradle.
   d) Mechanical link provides supination with elbow flexion (see figure 11) and pronation with extension (see figure 10) — cradle actually rotates.
   e) Negator spring type is similar to *a*). Negator spring used in place of band of rubber or dental dam.
6. Pronation assistance may be obtained by the same methods used for supination, but with the force acting in the opposite direction. Stationary pronation is advisable in certain situations for activities such as typing, playing piano, etc.
7. Swivel arms
   a) Bending first swivel arm down slightly has same result as angling cylinder forward.
   b) Bending first swivel arm up slightly has same result as angling cylinder backward.
   c) Length — usually best pattern is obtained if first swivel arm extends just forward to patient's waist.
      (1) If too long, it may limit the hand to head motion by keeping elbow too far from body. It will be difficult for patient to move second swivel arm.
      (2) If too short the range is limited.
   d) Twisting first swivel arm aids in control of second swivel arm horizontally.
      (1) Ball-bearing cylinder slanting away from body

Figure 11. Mechanical Link Supinator with Elbow Extended

      (*a*) Assists in keeping second swivel arm on the outside of first swivel arm.
      (*b*) Encourages horizontal abduction and extension.
      (2) Ball-bearing cylinder slanting toward body
      (*a*) Assists in keeping second swivel arm on the inside of the first swivel arm.
      (*b*) Encourages horizontal adduction and flexion.
   e) Second swivel arm
      (1) Rod should be no higher than cylinder supporting it.
      (2) Additional height should be obtained at distal end to give additional elbow clearance. This may be accomplished by:
      (*a*) Higher tubing
      (*b*) Height adjustment collar
      (*c*) Tubing height adjuster
      (3) Additional elbow clearance is possible by using a drop in second swivel arm — 1" or more — (see figure 8).
      (4) Length — Should be long enough to get adequate range horizontally but not limit hand to head. With a long second arm the first swivel arm should operate on the outside of patient's arm.
   f) Swivel arms for C-clamp feeders usually need no drop.
8. Stops — Stops are used to limit range of motion or to stabilize a joint. Stops may be used at any joint to allow just the range of motion that is controllable. It is wise to have patient work in an easy range

Figure 12. Rubber Band Type Supinator

to set a good pattern — then gradually change stops to increase the range. If swivel arms and ball-bearing cylinder are at correct angle stops can usually be eliminated. Experience brings control and controlled motion needs no stop. They are valuable in early feeder balance exercises and activities. The type stop depends on the type of feeder. These are discussed in detail in "Parts" of each type feeder.

9. Adjusting ball-bearing cylinder (base of feeder)
   a) Angling cylinder forward will assist downward, or head to table motion of the forearm support and hand.
   b) Angling cylinder backward will assist in upward or table to head motion of forearm support and hand or assist in controlling downward motion that is too rapid.
   c) Raising or lowering the cylinder will change height of swivel arms and hand.
   d) Twisting cylinder in towards the patient will assist in horizontal adduction and flexion.
   e) Twisting cylinder away from patient will assist in horizontal abduction and extension.

ADJUSTMENTS SPECIFIC TO SUSPENSION TYPE FEEDERS

1. Overhead bar
   a) Metal rod should be somewhat flexible.
   b) Height above head and adequate extension forward is important. Long arms require additional length forward.
   c) Abducting the bar gives greater range of horizontal abduction and sometimes greater elbow extension. It may also more accurately position the hand or the utensil to be used for an activity.
   d) Adducting the bar gives greater range of horizontal adduction and flexion of elbow. It may also assist in position of hand or utensil in function desired.
   e) It is occasionally necessary to use a bar between the overhead bars to suspend feeders at best point for control. These can be made adjustable and removable.
2. Spring or rubber bands (for small children)

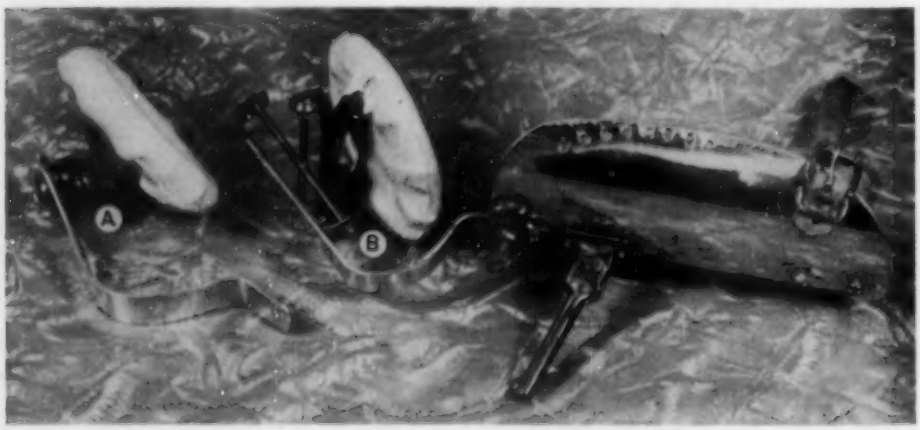

Figure 13. Removable Dials
A. Ball-bearing dial
B. Universal dial

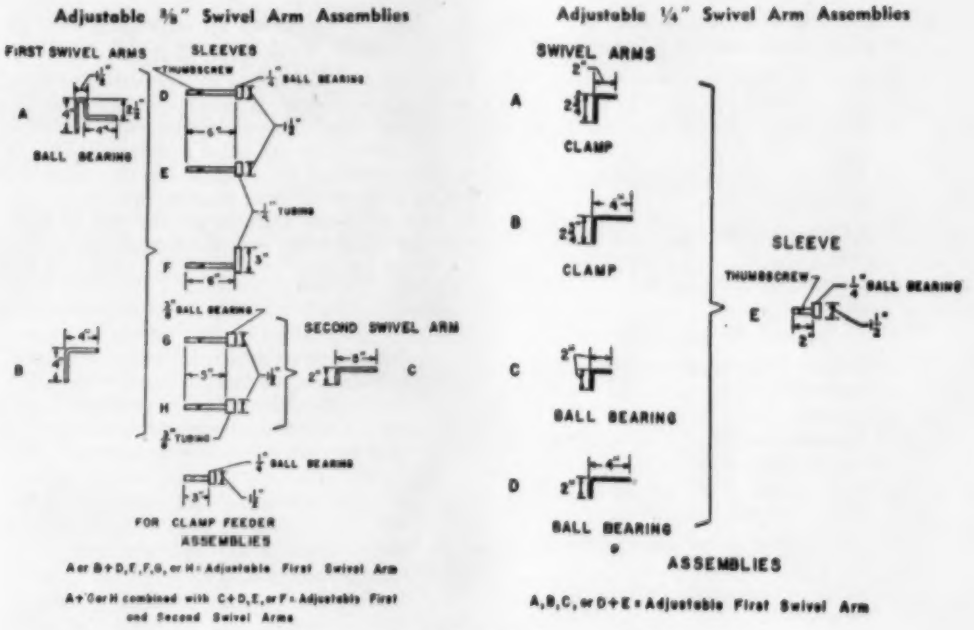
Adjustable ⅜" Swivel Arm Assemblies
FIRST SWIVEL ARMS
SLEEVES
THUMBSCREW
BALL BEARING
TUBING
SECOND SWIVEL ARM
FOR CLAMP FEEDER ASSEMBLIES
A or B + D, E, F, G, or H = Adjustable First Swivel Arm
A + G or H combined with C + D, E, or F = Adjustable First and Second Swivel Arms
Adjustable ¼" Swivel Arm Assemblies
SWIVEL ARMS
CLAMP
BALL BEARING
SLEEVE
THUMBSCREW
ASSEMBLIES
A, B, C, or D + E = Adjustable First Swivel Arm

Figure 14. Adjustable Swivel Arm Assemblies

a) Tension of spring and number of springs or rubber bands important — according to weight of extremity and amount of muscle power present.

b) Occasionally for more stability the spring is eliminated and strap suspended directly from rod.

c) Position of spring or strap on the bar
(1) Forward placement assists extension of elbow.
(2) Backward placement assists flexion of elbow.
(3) Position on bar may be easiest place to change adjustment.
(4) Adhesive, rubber bands, and scotch tape used for positioning spring in desired spot. File notches in rod for a final arrangement when needed. Usually patient acquires enough skill to eliminate precise positioning.

3. Length of strap is important. Adjusting length of strap for each of several different activities is often necessary in beginning feeder work, but when better control is established this is usually unnecessary.
a) For conservative treatment a short strap may be desirable but it should be made long enough to use on lower levels later.
b) In functional training, work toward using feeders at table or desk level to eliminate need of lap board. Sometimes it takes considerable time to get a patient functional at table level.

4. Stops — Stops on the channel should permit just the range that is controllable. It is wise to have patient work in the easy range to set a good pattern, then gradually change stops to increase the range.

Feeder Exercises

Be sure that feeders are fitting well and correctly adjusted before attempting to teach feeder exercises. Remember relaxing one motion may begin another.

1. Teach neck exercises in the chair with and without feeder equipment.
2. Trunk exercises are essential and should be done both with the equipment and without equipment.
3. The patient must be taught to keep the feeder balanced horizontally.

4. Teach exercises unilaterally first then work on same exercises bilaterally.
5. Upward, or hand to mouth motion, may be accomplished by:
   a) Depressing shoulder to elevate the hand
   b) Shifting body weight to the side of the feeder
   c) Rolling shoulder back — outward rotation
   d) Lateral bending to the side of the feeder
   e) Tilting and turning head
6. Downward hand to table motions may be accomplished by:
   a) Gravity
   b) Elevating shoulder to lower the hand (on the same side)
   c) Shifting the body weight to the opposite side from feeder
   d) Lateral bending to opposite side from the feeder
   e) Rolling shoulders forward or inwardly rotating
   f) Tilting and turning head
   g) Straightening up or leaning back to help bring hand up

Explanation — Use one or a combination of these motions, whichever is most efficient and requires the least energy. Spend time not only in the feeder set up on the motions that are needed to control the feeders, but also teach the patient as many of these as possible without arms in feeders. Some patients get the feel of these motions better when out of the equipment.

7. Teach control of each arm at feeder level.
8. Teach patient to stop at any point between the lapboard and the head.
9. Start work on horizontal adduction and at a midposition where the feeder is usually balanced. When this is possible, begin horizontal abduction and adduction at various heights between lapboard and head.
10. Progress to flexion and extension of the elbow at various heights in the horizontal plane. Start at the lapboard level.
11. Use games, arts, and crafts to improve fine feeder control, particularly flexion and extension, and adduction at table level.

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The Role of Physical Therapy in the Surgical Management of Heart Disease

Helen E. Cruickshank, Lieut., AMSC

"Show me how to breathe? I've been breathing all my life!" How many times have you encountered this attitude when attempting to teach "breathing" exercises? What technic do you use to overcome this frustrating problem? The following is a survey of the methods used by the Physical Therapy Section, Physical Medicine Service, of this hospital, which have proved successful in managing this situation in patients who are subjected to cardiac surgery.

The cardiologist initially determines whether the patient with heart disease will benefit from surgery, medication, or rest. If surgery is indicated, the patient is referred to the cardiovascular-thoracic surgeon, because this *is* thoracic surgery. As such, these patients are ultimately seen by the Physical Medicine Service for treatment. There are a number of cardiac defects which can be corrected or minimized by surgery. These surgical technics represent recent advances in the field, and are becoming more and more common as surgical and anesthesiology methods are perfected. The surgeon can open heart valves which have become stenosed because of rheumatic heart disease; he can close a patent ductus arteriosus; and he can resect a coarctation of the aorta, in addition to other conditions which are less frequently seen, and are more complicated. (Bing)

Actually, these cardiac defects do not primarily concern us as physical therapists, because we do not apply treatment directly to the heart. The surgeon corrects or minimizes the condition which was the patient's primary complaint, but in so doing, he must of necessity disturb structures which do concern us. (Evans and McDowell) In order to expose the heart, the chest cavity must be opened by the surgeon. He sections many muscles, some of which are inherently difficult to reeducate and to strengthen, and others which present a less serious problem provided *they are not ignored*. Following any thoracic surgery, postural deviations can be anticipated as a result of pain, splinting, or actual muscle weakness. These deviations can be minimized or prevented by proper exercises. In addition, deep breathing exercises are invaluable as a means of preventing or minimizing postoperative atelectasis and assuring an adequate return of vital capacity.

There are several important factors which we must consider when treating the cardiac patient. We must remember, first, that these patients have probably been extremely limited in physical activity for many years prior to surgery. Secondly, they have been subjected to a surgical procedure on an area normally under high arterial pressure. This fact, alone, may be expected to slow the patient's convalescence, since it is desirable to prevent any increase in cardiac output or arterial pressure as a result of physical exercise immediately postoperative.

It is generally accepted, for reasons already noted, that physical therapy can aid in the recovery of any patient who has had a thoracotomy. The objectives of physical therapy in such a case (VA Pamphlet 10-22) are as follows:

1. Preventing or minimizing chest deformities
2. Improving or maintaining body mechanics
3. Maintaining maximum shoulder motion
4. Restoring vital capacity
5. Shortening hospital stay

Since the patient who has been subjected to surgery to correct a cardiac defect must, of necessity, have had a thoracotomy, these objectives are applicable. A program of physical therapy designed to accomplish these objectives is dependent not only upon the frequently encountered postoperative "breathing exercises," but upon an equally important preoperative orientation. It is necessary that the surgeons, ward administrative personnel, and nurses be aware of the value of the entire Physical Medicine Rehabilitation program, so that all patients receive the full benefit of orientation, as well as treatment, both prior to surgery and following. Since this is an elective procedure, the patient is generally admitted to the hospital several days in advance of his surgery, thus affording sufficient time for preoperative examination and

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instruction by the physiatrist and physical therapist.

When there are a sufficient number of cases being treated, group exercise can be successful. Since all patients who will have or have had a thoracotomy should be encouraged to perform exercises regularly and without assistance, this supervised exercise session is valuable. Patients see one another in all stages of the program, and naturally there is an exchange of experiences. It is best that this should happen under supervision, so that any false concepts can be prevented or rapidly corrected. If the patient is apprehensive prior to surgery, his fears will usually be allayed when he observes the results in his fellow patients. One therapist can adequately manage a group of six or seven patients in all stages of care, thus conserving time and personnel. As a result, all patients are treated by the same technics and are given the same type of orientation and subsequent management.

When a new patient enters the group, his vital capacity is routinely determined and recorded. Since the vital capacities are regularly checked, the element of competition is introduced. Patients compete more on rate of improvement than any other factor, since they are made to realize that men and women of varying body build have varying capacities. It has proved valuable to the author to maintain this record on a plastic-covered wall chart, which is easily available to both patient and therapist. If a patient notes that his progress is slower than most, he is motivated, not only by the physical therapist but by the group, to perform his exercises more diligently.

In addition, the patient is examined for any postural deviations or limitation of motion of the upper extremities, and any abnormalities are noted during the initial treatment period. Any faulty positioning can be corrected as early as possible; yet the patient does not become too dependent upon the assistance of the physical therapist.

The patient has generally had the details of the surgical procedure explained to him by the surgeon. If the physiatrist and physical therapist spend some additional time prior to surgery to explain the procedure in terms which the patient can understand concerning muscle involvement and indications for physical therapy and assist in answering his questions, a great deal of apprehension can be allayed. When the patient has a clear picture of the entire treatment program and the reasons behind the treatment, cooperation between patient and physical therapist is enhanced and maintained. If a patient is merely told that he must do breathing exercises and arm exercises, he is usually not convinced that they will help him. But when the exercises are explained more fully and practiced diligently for as long as possible before surgery, he begins to realize that they are designed to shorten his convalescence, and he will cooperate to the utmost.

The pressure expansion or segmental breathing exercises are presumed to be resistive exercises for the intercostal muscles. We know that in order to make any muscle stronger it must be made to perform more work. If a weight or manual resistance is applied to the deltoid muscle during exercises, for example, the normal result is an increase in the strength of that muscle. Most patients can grasp this fact with no difficulty, because they have seen it happen to themselves or to others, but they are not aware of the muscular action involved in the function of respiration. When one asks a patient who has no medical background or training to explain how the air gets into his lungs, the answer usually is that the lungs expand and pull in the air. This incorrect concept must be corrected in the mind of the patient, and when the actual function of respiration is explained, the patient can see the rationale behind the "breathing" exercises.

A brief review of the pressure expansion exercises used at this Center is presented. The three main areas of application are: the lateral basal area, mainly over the 7th, 8th, and 9th ribs in the midaxillary line; the upper lateral area, directly below the axilla; and the apical area, in the pectoral region below the clavicle. Before the patient begins to inspire, firm pressure is applied. This is maintained during expansion so that he has a steady weight to push against. The patient must think of expanding against the pressure in the required direction. For the lower and middle area the direction is outward, and for the apical area it is upward and outward. The pressure is gradually lessened as full inspiration is reached, allowing the ribs to gain the greatest possible expansion. During the expiration phase the weight of the hand gently follows the relaxation of the ribs and finally presses inward to insure a rebound of the ribs upon starting the next expansion. This is not true expansion, but it is especially helpful in the very early reeducation when there is often little movement of the chest wall on the involved side. The palms of the hands are used to give pressure, except in the upper lobe where the fist is used. The auxiliary use of an ordinary bath towel folded in thirds lengthwise or a wide canvas belt

helps alleviate fatigue and allows the patient to exercise the basal and middle areas of the chest effectively for longer periods. (Reed)

The patient is also advised of the possibility of a painful arm on the operative side following the surgery. Splinting of the arm may result because of pain and immobilization due to the large bandage and drainage tubes. Early mobilization exercises are practiced to prevent the shoulder from becoming "frozen." Very often, if attention is drawn to the fact that the patient is unwittingly immobilizing his arm and shown that proper motion causes little or no increase in discomfort, he will guard against this dangerous disuse. Suggestion of the fact that a child with an injured finger holds the part in the most comfortable position until the pain subsides, regardless of the resulting stiffness, is often a useful analogy.

Following the surgical procedure, treatment is initiated on the ward by the physical therapist. This is continued until the ward physician permits the patient to be treated in the physical therapy clinic. During this period initial correction of postural deviations is begun by instructing the patient in the correct bed position and use of pillows to relieve pain. When the patient begins ambulating, he is less likely to develop the typical postural faults if he has been instructed and warned previously of the possible occurrence of postural changes.

The postoperative management of the cardiac patient is a continuation of the exercises taught prior to surgery. This fact helps to reinforce the contention that the preoperative phase of the program can be considered essential. Of necessity, the pace of the postoperative treatment is contingent upon the condition of the patient and the recommendation of the ward physician or surgeon. The physical therapist treats the patient upon whom cardiac surgery has been performed with the same technics as for any other surgical thoracic patient, but with a few additional precautions. We wait approximately three days before initiating postoperative treatment of the mitral stenosis and patent ductus arteriosus patient, and approximately seven days before treating the patient with a coarctation of the aorta. All of these patients should be started rather conservatively with passive range of motion of the left upper extremity to 90 degrees forward flexion, 90 degrees abduction, and some internal and external rotation. Pressure expansion exercises should be administered to the patient's tolerance. With the exception of the coarctation patient, they should be encouraged to begin active assistive and active exercises within one or two days following initial postoperative treatment. Patients are expected to perform the exercises routinely during the day for five or ten minute periods. They are instructed to begin increasing the range of motion as soon as the drainage tubes are removed.

The procedure for correcting a coarctation of the aorta is quite delicate, and success depends on absolute bed rest for at least one week or more following surgery, depending again on the condition of the patient. Any extreme arm motion could be fatal in the early days of recovery. Should the sutured section of the aorta rupture, there would be no time to repair this defect. Therefore, extreme caution is the best rule in caring for these patients. Conservative passive and active assistive exercises are indicated for the first five days following initial postoperative treatment. The patient is not encouraged to use actively the extremity until the ward doctor has approved. Again, excepting the coarctation patient, the others are usually well enough to be treated in the clinic soon after the sutures are removed — approximately eight days following surgery. Reeducation and strengthening of sectioned muscles can be started as soon as the patient can tolerate a more vigorous program. The patient should be encouraged again to continue the entire exercise program on the ward as feasible.

It is important that a home program should continue following release from the hospital. If the physical therapist provides the patient with a simple, but effective, written exercise program, there is a greater possibility that the patient will continue exercising, thus insuring maximum recovery and benefit from his intensive program. This should include a brief résumé of the pressure expansion exercises with instructions concerning areas to be exercised and any precautions which might be necessary for the particular patient. Shoulder exercises should be outlined, and specific exercises for the strengthening and reeducation of weak muscle groups indicated. An attempt should be made by the physical therapist to utilize to the utmost the facilities which the patient may have in his home. For example, we instruct the patient to use a side arm chair to do push-ups in order to strengthen the latissimus dorsi. We suggest objects that can be used as substitutes for the weights they have been using in the clinic. A special reminder is added concerning posture, and the patient is instructed to use a mirror daily to check for any postural faults. Ideally, the home program

should be evaluated by regular clinic visits until convalescence is complete.

In conclusion, it should be emphasized that the most important period in the recovery of the patient undergoing cardiac surgery is the preoperative orientation. If we, as physical therapists, can convince these patients from the very beginning that the program is definitely designed to hasten their recovery and to some degree insure an adequate return to normalcy, there is usually little or no resistance encountered during the recovery period. However, if we fail in this respect, it is quite evident in the attitude of the patient, and the entire convalescent period becomes a severe challenge to both therapist and patient. The physical therapist must then make a valiant, but often futile effort to correct this serious situation. Working under the premise that the informed patient develops into the cooperative patient, it seems important for us to double our efforts in orienting our patients in order to facilitate their recovery and insure the best possible results.

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Some Practical Aspects of Gait Training

Ruth Cook, M. A.

The basic prerequisites for an adequate gait training program are three-fold. The first is an adequate knowledge of the patient's physical status. The second is an understanding of the objective to be reached by a gait training program, and the third is an understanding of the patient's walking pattern.

The primary gait objectives considered at the Morrison Center for Rehabilitation are: endurance, speed, aesthetics, and exercise.

Walking patterns are analyzed by consideration of the function of each gait subphase delineated by the Prosthetic Devices Research Group of the University of California at Berkeley. In general, toe-off is considered to be related primarily to propulsion, toe-off to foot abreast to acceleration and clearance, heel strike to deceleration and midstance to lateral stability.

"Tools" which may be used to assist the patient in reaching the gait objective are: muscular and fascial structures on both the affected and unaffected sides of the body; adjustment of the onset, duration, and amplitude of muscular contraction; attention to the step length, stance time and over-all gait speed; and alteration of the segmental or total body alignment. Accessory support such as bracing and crutches are important aids but for purposes of simplification will not be considered in this discussion.

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Gait training technics, which have proven useful for patients with defects in each of the broad gait categories, have been delineated in the following charts. It is important to note that, in general, technics to acquire endurance and speed are essentially the same, the difference being that for speed little use is made of the affected side. For aesthetics the basic rule is to make movement as alike on both sides of the body as possible. For exercise, emphasis is placed on the use of the affected musculature and the technics are often the reverse of those where endurance or speed are the objectives.

Analysis of chart 1 shows that, where patients lack the normal mechanism for propulsion (thrust of the gastrocnemius), early pelvic elevation combined with strong plantar flexion of the unaffected foot will suffice to move the body forward and upward. Both endurance and speed can be acquired in this manner. When an aesthetic gait is required the unaffected foot should not be strongly plantar-flexed and the patient should take short, fairly quick steps letting the knees stay slightly bent throughout stance. To exercise the affected gastrocnemius,

CHART I.

Gait Phase: Toe-Off — Mechanism: Propulsion

Gait Objective	Side of Body	Muscles Which Can Be Used	Onset of Muscle Action	Duration of Muscle Action	Step Length	Stance Time	Gait Speed	Body Alignment
		Gait Training Tools						
Endurance	Affected	Pelvic elevators	Before toe-off	To foot abreast	Short	Short	Moderate	Inclined forward
		Knee and hip flexors	At toe-off	To foot abreast				
	Unaffected	Plantar flexors	At toe-off	To foot abreast	Long	Long		
Speed	Affected	Plantar flexors of toes & foot (if present)	At toe-off	To foot abreast	Very short	Very short	Fast	Further inclined forward
	Unaffected	Plantar flexors	1. At toe-off 2. At midstance	1. To foot abreast 2. To toe-off	Long, or 2 of moderate length if hop-skip is used	Long, or double if hop-skip is used		
Aesthetics	Affected	Plantar flexors	1. At toe-off 2. At heel strike	1. To foot abreast 2. Thru stance	Short	Short	Mod'ly. slow	Upright
		Knee extensors	At heel strike	Thru stance				
	Unaffected	Plantar flexors	At toe-off (minimal)	To foot abreast	Short	Short		
		Knee extensors	At heel strike	Thru stance				
Exercise	Affected	Plantar flexors	As foot moves to toe-off position	Thru toe-off	Short progressing to long	Long	Slow	Upright or slightly backward
	Unaffected	None	None	None	Short progressing to long	Short		

CHART II.

Gait Phase: Toe-off to Foot Abreast — Mechanism: Acceleration

Gait Objective	Side of Body	Muscles Which Can Be Used	Onset of Muscle Action	Duration of Muscle Action	Step Length	Stance Time	Gait Speed	Body Alignment
		Gait Training Tools						
Endurance	Affected	Trunk flexors	Before toe-off	Toe-off	Moderate	Long	Moderate	Forward before toe off
		Trunk extensors	Toe-off	At descent of leg to heel strike				
		Internal rotators of pelvis	Toe-off	Following heel strike	Short			Back and to unaffected side from toe-off to foot abreast
	Unaffected	External rotators of pelvis	At toe-off of affected side	Just before heel strike of affected leg	Moderate	Long		
		Lateral trunk flexors	"	"				
		Gluteals	"	To foot abreast of affected leg				
		Gastrocnemius	"	"	Long			
		Trunk flexors	Before toe-off	Toe-off of affected leg				
		Trunk extensors	At toe-off	Descent of affected leg to heel strike				
Speed	Affected	As above	As above	Trunk flexors as above. Others-to foot abreast of affected leg	Short	Short	Mod'ly. fast	As above
	Unaffected	As above	As above	As above	Long	Long		
Aesthetics	Affected	As above but minimal activity	As above	As for speed	Short	Short	Mod'ly. slow	Normal
	Unaffected	As above but omit gastrocnemius	As on affected side	As on affected side	Short	Short		
Exercise	Affected	Emphasize flexion, extension and rotation	At toe-off	After heel strike	Long	Long	Slow to fast	Opposite to that for endurance
	Unaffected	Minimal emphasis	-----	-----	Short	Short		

CHART III.

Gait Phase: Toe-Off to Foot Abreast — Mechanism: Clearance

Gait Objective	Side of Body	Gait Training Tools: Muscles Which Can Be Used	Onset of Muscle Action	Duration of Muscle Action	Step Length	Stance Time	Gait Speed	Body Alignment
Endurance	Affected	If available: Pelvic elevators	Before Toe-off	After foot abreast	Short	Mod'ly long	Moderate	Normal except for moderate lateral shift to unaffected side as affected leg begins swing
		Knee and hip flexors	Toe-off	"				
		Foot dorsiflexors	Toe-off	"				
		Otherwise: Leg abductors	Toe-off	To descent of leg to heel strike				
		Leg external rotators	Toe-off	"				
	Unaffected	Lateral trunk flexors	Toe-off of affected side	After foot abreast of affected leg	Mod'ly. long	Mod'ly. long		
		Gastrocnemius soleus	Toe-off of affected affected side	Until affected leg descends to heel strike				
Speed	Affected	As above but minimal activity	As above	All to foot abreast	Short	Short	Fast	Forward & large lateral shift to unaffected side as affected leg begins swing
	Unaffected	As above	Lateral trunk as above. Gastrocnemius soleus may contract twice. Toe-Off and foot abreast of affected leg	Lateral trunk as above. If gastrocnemius contracts twice just after toe-off and after foot abreast of affected leg	Long	Mod'ly. long or double		
Aesthetics	Affected	As above but minimal activity	As above for endurance	To full heel strike	Short	Short	Mod'ly. slow	Normal as possible
	Unaffected	As on affected side	As on affected side	As on affected side	Short	Short		
Exercise	Affected	Omit leg abductors & external rotators maximum activity	As foot moves to toe-off	To heel strike	Long	Short	Slow	Slightly back & to affected side
	Unaffected				Long	Short		

long steps with conscious thrust are advisable. The fastest gait is actually acquired by using a double hop during the stance phase of the unaffected foot.

Acceleration is normally a function of the hip flexors, pelvic internal rotators on the side of the swinging leg, and of the trunk and hip extensors on the stance side. Where this mechanism is defective it is often advisable to exaggerate trunk flexion preceding toe-off on the affected side and follow this by a swift thrust of the unaffected gastrocnemius. At the same time both the trunk and the pelvis on the affected side are rotated internally (moved forward) and flexed laterally toward the unaffected, or stance, side. As indicated in chart 2 the objectives of endurance, speed and even aesthetics can be secured with this technic. For the latter, however, minimal trunk and pelvic rotations are advisable. Contraction of the unaffected gastrocnemius is also reduced or omitted in this case.

From toe-off to foot abreast the primary gait function is clearance as well as acceleration. Pathology which results in limitation of flexion at the ankle, knee or hip, or in muscular weakness of the groups responsible for such flexion, will produce noticeable defect in this part of the walking cycle. To assist a patient increase clearance of the swinging leg, exaggerated use may be made of the leg abductors and external rotators on the affected side, or the lateral trunk flexors and calf muscles on the unaffected side. If good pelvic elevators are available on the affected side they should be brought in somewhat earlier than normal (as the leg moves in to the toe-off position) and their contraction should be held throughout swing. Occasionally, for an aesthetic gait, this slight increase in pelvic elevation combined with a slow thrust of the opposite calf group, letting the knee on the stance side bend as the swinging leg comes to the foot abreast position, may be sufficient. Chart 3 outlines these technics.

Once again the hop-skip on the stance foot will give a fast gait. In this case, too, most of the momentum and therefore clearance will come from the large, fast, trunk and pelvic rotations over the unaffected leg. These should not be controlled when speed is desired. For endurance the range should be reduced. For aesthetics they should be minimal.

Chart 4 delineates methods of promoting, or controlling, leg deceleration. Deceleration is rarely a problem except where gait aesthetics is

CHART IV.

Gait Phase: Foot Abreast to Heel Strike — Mechanism: Deceleration

Gait Objective	Side of Body	Muscles Which Can Be Used	Onset of Muscle Action	Duration of Muscle Action	Step Length	Stance Time	Gait Speed	Body Alignment
Endurance	1* Affected	Toe flexors	After foot abreast	Thru heel strike	Mod'ly. long	Mod'ly. short	Mod'ly. slow	Erect or slightly backward
		Ankle plantar flexors	"	"				
		Quadriceps	"	"				
		Back extensors	After toe-off	"				
	1* Unaffected	Hamstrings	Foot abreast of affected side	Thru heel strike of affected leg				
		Gluteals	"	"				
		Back extensors	After toe-off	"				
		Quadriceps	Just before heel strike of affected leg	To full weight bearing of affected leg				
Speed	Affected				Long	Long	Fast	Erect or forward
	Unaffected				Long	Long		
Aesthetics	2* Affected	As for endurance	As for endurance	As for endurance	Short	Short	Mod'ly. slow	As normal as possible
	3* Unaffected	As for endurance	As on affected side	As on affected side	Short	Short		
Exercise	Affected		Hamstrings and gluteals just prior to heel strike	To midstance	Long	Long	Slow	Forward
	Unaffected				Long	Short		

1* Minimal activity of all musculature — 2* Maximum activity — 3* Equalize effort of affected side

CHART V.

Gait Phase: Heel Strike to Midstance — Mechanisms: A. Trunk Erection, B. Knee Flexion & Extension

Gait Objective	Side of Body		Muscles Which Can Be Used	Onset of Muscle Action	Duration of Muscle Action	Step Length	Stance Time	Gait Speed	Body Alignment
Endurance	Affected	A.	Hamstrings (As hip extensors)	Prior to heel strike	To full weight bearing	Short	Short	Mod'ly. slow	Erect or slightly backward
			Quadriceps	Heel strike	"				
			Gastrocnemius	"	"				
			Internal rotators of pelvis	"	"				
	Unaffected	A.	Trunk extensors	Prior to heel strike "	" "	Mod'ly. long	Mod'ly. long		
			Gluteals	" "	" "				
			Hamstrings	" "	" "				
			Gastrocnemius	" "	" "				
	Affected	B.	Trunk flexors	Heel strike	"	Short	Short	Mod'ly. slow	Forward
			Foot invertors & plantar flexors	"	"				
			Hamstrings	"	"				
			Gluteals	"	"				
	Unaffected	B.	Gastrocnemius & toe flexors	" "	" "	Short	Long		
Speed	Affected	A.				Short	Short	Mod'ly. slow	Slightly forward
	Unaffected	A.	As above - Maximus fast and short			Long	Long		
	Affected	B.	As above			Short	Short	Mod'ly. slow	Far forward
	Unaffected	B.	As above			Short	Long		
Aesthetics	Affected	A. & B.	As for endurance but contractions of small range & amplitude	As for endurance	As for endurance	Short	Short	Slow	Normal as possible but minimum range
	Unaffected	A. & B.	As on affected side	As affected	As affected	Short	Short	Slow	"
Exercise	Affected	A.	Trunk extensors hamstrings and gluteals	Heel strike	Midstance	Long	Long	Slow	Exaggerate range forward
	Unaffected	A.				Short	Short		
	Affected	B.	Quadriceps	Heel strike	Thru stance	Long	Long	Fast	Exaggerate range and duration backward
	Unaffected	B.				Long	Short		

" Of the affected leg

CHART VI.

Gait Phase: Midstance — Mechanism: Lateral Stability

Gait Objective	Side of Body	Gait Training Tools: Muscles Which Can Be Used	Onset of Muscle Action	Duration of Muscle Action	Step Length	Stance Time	Gait Speed	Body Alignment
Endurance	Affected	Trunk extensors	Heel strike	Thru stance	Short	Short	Mod'ly. fast	Erect and to affected side
		Gluteals (remaining)	"	"				
		Hamstrings	"	"				
		Lateral trunk flexors	"	"				
		Tensor	"	"				
		Iliofemoral ligaments	"	"				
	Unaffected	Pelvic elevators	" (of affected leg)	" (of affected leg)	Short	Short		
Speed	Affected	Trunk extensors gluteals (remaining) hamstrings, lateral trunk extensors	As above	"	Long	Short	Fast	As above with larger shift
	Unaffected	As above	As above	"	Short	Short		
Aesthetics	Affected	As for endurance	"	"	Short	Short	Mod'ly. fast	Minimal shift
	Unaffected	As on affected side	"	"	Short	Short		
Exercise	Affected	Gluteus medius	Heel strike Toe-off	Thru stance Thru swing	Long	Long	Slow	Forward and to unaffected side
	Unaffected				Long	Short		

concerned. Here the "clonking" of a braced leg to the floor, or the "slap" of a foot when the dorsiflexors are absent is undesirable. In the latter case we have found that it is effective to have the patient plantar flex the affected foot before heel strike. At heel strike he is advised to flex his toes and his knee. The knee is then allowed to straighten slowly but is not allowed to extend completely during stance. Where speed and endurance are the objectives this "drop" of the foot should not be modified to any extent.

Deceleration in cases where the patient is wearing an AK prosthesis, a long leg brace, or where the leg is flail, must come from the pelvic-trunk level. Advising a longer contraction of the pelvic elevators and lateral trunk flexors combined with eccentric contraction of the quadriceps on the stance side is effective in acquiring a more aesthetic gait.

Chart 5, section A, deals with methods of enhancing trunk extension following heel strike. This is normally a primary function of the hamstrings and gluteals. Where such muscular control is defective the following technic is useful in enhancing the patient's endurance. Before heel strike the pelvis should be fully internally rotated. This should be followed by a strong thrust of the quadriceps and gastrocnemius the moment the foot touches the ground. At the same time the patient should "stretch toward the ceiling" and strongly contract the hamstrings and gluteals on the unaffected side. In addition, if the unaffected foot strongly plantar flexes as the opposite leg is just touching the floor, trunk extension will be even more enhanced.

Chart 5, section B, is concerned with defects in the normal flexion-extension phase of the knee which follows heel strike. As the body weight comes on to the stance foot, the knee tends to flex under the superimposed weight. The quadriceps then contracts to counteract this thrust. At this part of the gait cycle any instability or weakness of the knee joint will be a problem. Here we advise keeping the trunk in forward flexion, the stance foot inverted and the hip extended by strong hamstring-gluteal action. A somewhat stronger thrust of the gastrocnemius on the opposite side will help in moving the trunk weight forward.

At midstance the most significant gait feature is lateral stabilization of the pelvis. This is normally a major function of the gluteus medius. Chart 6 outlines an effective technic to assist the walker when the normal mechanism is lost. Short, fairly quick steps are basic. For endurance the patient is advised to shift the pelvis obliquely forward and sideways so that the hip becomes locked against the tensor and iliofemoral ligaments. The buttocks are then tightened to tilt the pelvis and erect the trunk. The pelvic elevators on the side of the swinging leg must be contracted strongly before the leg lifts and they must hold until swing is complete. The "swing" must be short and fast. This "pelvic tilt" method is not useful where speed is concerned.

SUMMARY

The basic prerequisites for an adequate gait training program are knowledge of the patient's

physical status, of the gait objective, and of the patient's walking pattern.

Walking patterns are analyzed by consideration of the function of each gait subphase. In general, toe-off is considered to be related to propulsion, toe-off to foot abreast to acceleration and clearance, heel strike to deceleration, and midstance to lateral stabilization.

Gait objectives used most often at the Morrison Center for Rehabilitation are: endurance, speed, aesthetics, and exercise.

Gait training "tools" are: certain muscular and fascial structures on both the affected and unaffected sides of the body; adjustment of the onset, duration and amplitude of muscular contraction; attention to step length, stance time, and over-all gait speed; and alteration of the segmental or total body alignment.

Technics found useful in helping patients with gait defects are outlined in chart form and are discussed. It is important to note that, in general, technics to acquire endurance and speed are essentially the same, the difference being that for speed little use is made of the affected side. For aesthetics the basic rule is to make movement as alike on both sides of the body as possible. For exercise, emphasis is placed on use of the affected musculature and the technics are often the reverse of those where endurance and speed are concerned.

The author wishes to acknowledge the valuable assistance of Miss Donnamae Winters, Physical Therapy Supervisor at the Morrison Center for Rehabilitation, in evaluating technics and devising the gait training charts.

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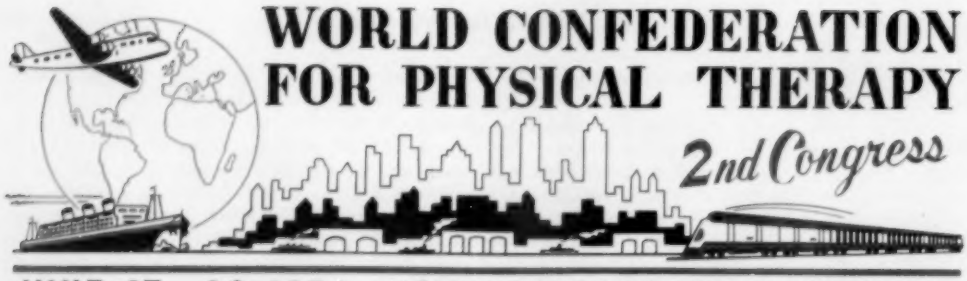
(Continued on page 667)



WORLD CONFEDERATION FOR PHYSICAL THERAPY

2nd Congress

JUNE 17—23, 1956 · HOTEL STATLER · NEW YORK, N.Y.

Intermediate Program

Sunday, June 17

11:00 a.m.	Religious Services
2:00 - 5:00 p.m.	Registration
5:00 - 8:00 p.m.	Reception

Monday, June 18

Morning	Registration Opening Ceremony
Afternoon	Summaries on status and needs in physical therapy by principal observers from governments Coordinator: Morris Fishbein, M.D.
Evening	Boat trip around the Island of Manhattan. Host: New York Chapter

Tuesday, June 19

Morning

"Health, A Strong Force for World Understanding—The Role of the Physical Therapist"
Howard Rusk, M.D.

"The Physical Therapist — His Education and Responsibilities"
Catherine Worthingham, Ph.D.

"The Physical Therapist — His Relationships to his Fellow Workers and the Community"
Colonel Harriet S. Lee

Afternoon — Two Concurrent Sessions

Session A

Panel Discussion — The Role of the Physical Therapist in the Evaluation Studies of Polio Vaccine Field Trials

Cerebral Palsy: Similarities and Differences in Methods of Treatment

Session B

Panel Discussion — Prosthetics — Research and Developmental Aspects and Training

Wednesday, June 20

Morning — Two Concurrent Sessions

Session A

—Principles of Underwater Exercise
—Therapeutic Use of Water
—The Physical Therapist on the Obstetrical Team (Great Britain)

Session B

—Symposium on Body Alignment as Related to Activity
—Posture and the School Child (Denmark)
—Posture in Industry (Sweden)
—Posture and Pain (England)
—Exercises for Bechterew's Disease (Germany)

Afternoon — Two Concurrent Sessions

Session A

—Symposium — Selected Testing and Evaluation Procedures
—Development and Current Use of Manual Muscle Testing in the United States
—Development and Current Use of Functional Testing in the United States
—Electromyographic Studies
—Joint Measurement — Technics and Recording Methods

Wednesday, June 20

Afternoon

Session B

—Physical and Physiological Effects of Introducing Heat to Living Tissues

—Physiological Basis for Heat

Evening — Banquet

Thursday, June 21

Morning — The Patient and the Physical Therapist in the Community's Rehabilitation Program — Symposium

The Patient as a Person

Canadian Home Care Program

Convalescent Program for the Severely Disabled

Utilization of Community Resources for Rehabilitation

Afternoon — General Meeting of the W.C.P.T.

Friday, June 22

Morning — Three Concurrent Sessions

Session A

—Symposium — Bracing and Adaptive Devices for Neuromuscular Disorders

Session B

—Educational Seminar

Session C

Papers from member societies of the W.C.P.T.

Afternoon — Panel Discussion — Responsibilities of the W.C.P.T.

Closing Ceremony

Film Theatre

Beginning Tuesday, June 19, there will be a daily schedule of films from abroad and this country.

Study Visits

Study visits will be scheduled to selected centers in New York City on two or more afternoons.

Social Events

The calendar of social events is not yet complete. In addition to planned receptions there will be New York with its Broadway, Times Square, Television and Radio Studios, Sightseeing, Theaters and Museums.

Post Congress Tours

Two all-expense five-day tours have been arranged, one to Boston and one to Washington. These combine professional visits with sightseeing and provide the traveler with a big tour for a small fee. All expense includes transportation service, lodging, meals, and tours. All coaches are air-conditioned, have reclining seats, and underneath luggage compartment.

No. 1 - Boston $88.00

Sunday - June 24th

Leave New York and via George Washington Bridge, proceed to West Point (lunch at Thayer Hotel). Tour will continue to Great Barrington, Massachusetts, with a stop enroute at Hyde Park to visit the Roosevelt Memorial and Library. Overnight at Great Barrington.

Monday - June 25

Leave Great Barrington and proceed to Boston. Enroute a visit will be made at Sturbridge, Massachusetts where recreated is a New England farming community of a century and a half ago (lunch in the historic Tavern).

Tuesday - June 26

In the morning a sightseeing tour of modern and historic Boston will be accomplished by the Boston Gray Line. After lunch a visit will be made to Lexington and Concord.

Wednesday - June 27

The morning and early part of the afternoon will be utilized for professional visits. Group will be checked out and have their baggage on board in order that the departure from Boston can be coordinated with the professional visits. Taking the coastal route, the tour will pass through Plymouth, New Bedford, and Newport, Rhode Island. Overnight in Newport.

Thursday - June 28

The final day of the tour will continue along the coast line to Mystic, Connecticut where we will visit some of the remnants of this old seafaring town. The last leg of the trip will include

a stop at New Haven for a professional visit. Arrival in New York will be about 8:00 P.M.

No. 2 - Washington $88.00

Sunday - June 24

Leave New York for Philadelphia, where a tour conducted by Philadelphia Gray Line will be accomplished.

Monday - June 25

The morning will be spent on a professional visit. In the afternoon, depart Philadelphia for Washington.

Tuesday - June 26

In the morning Washington Gray Line will conduct the group on a tour around the city terminating at the Capitol. After a guided tour through the Capitol, the group will have lunch in the hotel. The afternoon will be spent visiting Alexandria, Arlington Cemetery, and Mt. Vernon.

Wednesday - June 27

Professional tour (to be announced).

Thursday - June 28

Leave Washington and return to New York via Annapolis. Lunch in Annapolis.

Reservations

Reservations should be mailed to the National Office accompanied by a $25.00 deposit. Space will be reserved on a first come-first served basis. The full amount of the tour must be received by May 15. Cancellations will be accepted up to May 1 and full deposit returned. Those cancelling later will have 20 per cent deducted from the deposit. The number of seats is limited.

Reserve Now

Educational Courses

There will be opportunities before and after the Congress for those wishing short refresher courses. Watch the Review for further details.

University of Connecticut

Post Congress Course — June 25-30, 1956. The University of Connecticut School of Physical Therapy is offering a five-day course on recent advances in upper extremity prosthetics including basic kinesiology, amputation levels, prosthesis, harnessing, and training. Cost, $80.00 for tuition, room and meals. Accommodations will be available on campus.

The faculty will include Dr. Charles Bechtol and staff of the Physical Therapy School, University of Connecticut.

For further information and application write to Frances Tappan, Technical Director, School of Physical Therapy, University of Connecticut, Storrs, Connecticut, U.S.A.

Kessler Institute

A post-Congress four-to-five day institute is being planned.

* * *

Enroll Now

Send in your enrollment form prior to February 1, 1956. Early enrollment will help your planning committee. If you failed to receive your form, write to the National Office.

Membership Categories

Full Members — Physical therapists, occupational therapists, medical social workers, physicians, vocational counsellors, nurses, administrators of hospitals and rehabilitation centers, board and staff members of organizations interested in the handicapped.

Student Members — Students in the approved schools of physical therapy in the member organizations of the World Confederation for Physical Therapy.

Social Associates — Members of the family or friends of a full member. This will permit attendance at general meetings, visiting exhibits, and participating in a social program prepared for them during time of scientific sessions.

Membership Fees

Until February 1, 1956	
Full Members	$10.00
Student Members	5.00
Social Associates	8.00
After February 1, 1956	
Full Members	12.00
Student Members	6.00
Social Associates	10.00

Members who have enrolled but who are subsequently unable to attend may have their fees refunded less 20 per cent, provided cancellations are received by May 1, 1956.

Hotel Reservations

Statler reservation cards will be sent out in February 1956.

Courtesy of New York Convention and Visitors Bureau

The United Nations

New Landmark of New York - New Symbol of the World

Only a few blocks from the roaring hustle and bustle of midtown Manhattan, surrounded by the green lawn and fresh new trees of the recently landscaped park, stands the strikingly modern buildings of the Headquarters of the United Nations. Mirrored in the waters of the East River or viewed from the streets of Manhattan it is impossible to avoid the impact of this monumental structure. The grouping and clean unbroken lines of the buildings are almost sculptural in their splendour giving a new visual experience from every point of view.

Only a few years ago slums and deteriorated tenements shut off the view of the sky and the river where now this magnificent symbol of the hope for a peaceful world occupies a permanent place among New York's landmarks.

The Headquarters of the United Nations is located on an eighteen-acre tract between 42nd and 48th Streets and between First Avenue and the East River. It comprises the General Assembly, Secretariat, Conference, and Library Buildings. Although some of the United Nations offices are in Europe, most of the meetings are held in the New York headquarters.

All but a few meetings are open to the public and admission is free. Arrangements can be made for group attendance of meetings if the bookings are made far enough in advance. Because there is no advance schedule of meetings for any given day, and since meetings may be cancelled or changed at the last minute, the majority of seats available to individual visitors are issued on first come first served basis.

At most meetings speeches are simultaneously interpreted into the five official languages—Chinese, English, French, Russian, and Spanish. Earphones and a telephone dial system are provided at each seat so the visitor may switch to any of the five language interpretations.

For those who want only a brief look inside the enormously complex structure of the Headquarters, guided tours are conducted every day of the week. The hour-long tours leave the lobby of the General Assembly Building every ten minutes or so from 9 a.m. to around 4:40 p.m. The

tours are conducted by expert guides of international selection who explain the exhibits and the general work of the United Nations. Lectures on the United Nations also are given and United Nations films are shown throughout the day except when meetings prevent it.

Among the highlights of the tour perhaps the most impressive is the General Assembly Auditorium. The acoustically perfect meeting hall is 165 feet long by 115 feet wide with a 75 foot ceiling. In the dome a circular skylight four feet in diameter admits a single shaft of sunlight. On the grey-blue wall behind the President's podium are circular golden shields for the coats of arms of the member nations, with the United Nations emblem in the center. Fluted wooden buttons covered with gold leaf form the side walls from the dome downwards. The walls of the hall, where over 1,300 seats for observers, press, and visitors are located, are covered with the often discussed murals by the French artist, Fernand Leger. While the great assembly hall impresses the visitor with its grandeur and vast scale, the other relatively smaller chambers furnished by the individual nations strike a note of absorbing beauty and rare harmony. The Chamber of the Trusteeship Council, designed by Finn Juhl, combines the color and clean effect of ashwood lined walls. Marble panels topped by tapestry and rare inlaid wood contribute to the atmosphere of the Security Council Chamber designed and furnished by Norway. The large mural by Per Krong symbolizes the future of peace and individual freedom through the United Nations. The Economic and Social Council Chamber is noted for the unique ceiling treatment used in the public gallery. Exposed pipes and ducts are boldly decorated with rectangles of black, grey, and white, integrating the functional fixtures with the design and creating a workshop-like atmosphere. This design, with the contrasting white marble floor, carpets, curtains, and other furniture, were furnished by Sweden.

A beautiful gift from the Children of the United States is the reflecting pool and fountain outside the Secretariat building with its black pebbles and crushed white marble floor.

In almost every piece of work one may observe not only the harmony of artistic creating but the symbol of contributions of several nations' natural wealth and talent. Thus, the entire United Nations Buildings strive to express this desire to cooperate and harmonize actions toward a common end.

The United Nations in its tenth year can look back on a record of substantial achievement and forward to the hope of progress in such vital fields as disarmament and developing the peaceful uses of atomic energy. This is not to say that there have not been delays and disappointments in the years since its birth. Still, the United Nations embodies man's best hopes and has many successes to its credit.

The Specialized Agencies of the United Nations were established by international agreements and have wide responsibilities in economic, social, cultural, and educational health and related fields. The activities of the Agencies are coordinated by the Economic and Social Council. The Economic and Social Council was created to bring about higher standards of living, full employment, and conditions of progress throughout the world, on the premise that nations must help each other to solve common economic, social, health and related problems.

"Health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition." The words are from the constitution of the World Health Organization, one of the largest of the specialized agencies of the United Nations. For practical help in their health problems all nations can turn to WHO which is dedicated by its constitution to work for "the attainment by all peoples of the highest possible level of health." In its work towards promoting physical, mental, and social well-being for all, WHO carries out projects for improving the sanitary conditions under which people live, for education of health workers all over the world, provides fellowships to health specialists to undertake special studies and research outside their own countries, and promotes services on occupational health and medical rehabilitation. In recent polio epidemics in India and Chile WHO arranged for air dispatch of respirators and called together in Paris polio experts from all over the world to decide the best ways of fighting the disease.

Recent developments in the United Nations' rehabilitation program, carried out by a special Rehabilitation Unit in the Social and Economic Council, show strong emphasis on practical field projects in less developed countries designed to stimulate and develop greater services to the handicapped. Technical assistance is provided with emphasis on the team approach. Physical therapists from the member organizations of the World Confederation for Physical Therapy are participating in demonstration projects in Egypt, India, Guatemala, and Venezuela. In this year

of preparation for the Second Congress of the World Confederation for Physical Therapy we find a valid and admirable example to follow in the spirit and work of the United Nations and its specialized agencies programs.

Each of us has an inalienable right to health. But each of us has also an inalienable responsibility for the welfare of our fellow man, not in terms of our own community alone but of the whole human race.

Postgraduate Courses in Rehabilitation Announced by University of Pennsylvania

The University of Pensylvania announces the following post-graduate courses for physical therapists sponsored by the U. S. Office of Vocational Rehabilitation: A limited number of traineeships covering the fees and part of the living expenses will be available through the U. S. Office of Vocational Rehabilitation.

Housing

Students will make their own living arrangements but on request the School will be glad to offer suggestions.

Application

Applications must be received at least three weeks before the beginning of the course.

For further information address

The Director, Division of Physical Therapy
1318 Lombard Street
Philadelphia 46, Pennsylvania

Name of Course

Organization, Administration and Supervision

Dates of Course

October 10 through 21, 1955
February 13 through 24, 1956

Course Content

Course emphasizes administration as a necessary function of every physical therapist and deals with the responsibilities of the physical therapist as a staff member, supervisor and/or director. Existing problems will be examined and their prevention and solution explored through the use of standard administrative technics and practices. Areas of study will include: job analysis, supervisory and teaching methods, communications, and budget preparation.

Tuition

$25.00

Name of Course

Rehabilitation of the Handicapped

Dates of Course

November 14 through December 2, 1955
March 5 through March 30, 1956

Course Content

Present concepts in rehabilitation such as: pertinent legislations, community resources, responsibilities of all disciplines in patient care, use and interpretation of tests and measurements, self care and daily skills, and assistive devices will be covered. New trends and developments in medical care and physical therapy procedures will be emphasized. Clinical demonstrations will be given and clinical practice opportunities will be made available to enrollees.

Tuition

$37.50

Name of Course

Principles of Rehabilitation

Dates of Course

December 5 through 9, 1955
February 6 through 10, 1956
April 2 through 6, 1956
June 25 through 29, 1956

Course Content

The understanding and application of basic concepts of rehabilitation as they apply to patient care with emphasis on the term approach and the responsibility of each member of the group for integrated care.

Tuition

No tuition fee

Editorial

During the past fifteen years, medicine has witnessed tremendous advances in rehabilitation. These advances, and the accompanying professional and public interest in rehabilitation, have been reflected greatly in physical therapy, for in many ways, physical therapy is the cornerstone of physical rehabilitation.

These advances, fortunately, have not been limited to technical advances in the use of physical agents in the diagnosis and treatment of disease and disability.

Paralleling them has emerged a new emphasis by all on the dignity of man—recognition that it is not eyes and ears and extremities, but the spirit within that makes a man.

We have also recognized socially that it is a responsibility of a free and democratic society to see that every member of our society, regardless of his circumstances, has the opportunity to make his maximum contribution—to live within his limitations but to the hilt of his potentials.

We have also discovered that this attitude toward rehabilitation services for the physically handicapped pays economic as well as social dividends. Each year, for example, we spend approximately one-half billion dollars of state and federal funds to maintain thousands of persons who have been forced onto public assistance rolls because of disability and inability to support themselves or their families.

Fortunately, under the provision of the Vocational Rehabilitation Act of 1954, the prospects are extremely bright at present for the substantial expansion of rehabilitation services that is necessary if we are to provide services to those who need them. Under this expanded program, it is hoped that the approximately 58,000 persons provided vocational rehabilitation services under the federal-state program can be increased gradually until 1959 when 200,000 disabled persons are provided such services annually.

Probably the most encouraging aspect of this significant legislation is the fact that it is designed to strengthen rehabilitation services in general and is not limited specifically to the federal-state vocational rehabilitation. Its sponsors recognized that if this ambitious goal is to be achieved, the nation must have more qualified physical

Editorial

therapists and other professional workers and must build more rehabilitation facilities.

Today, unfortunately, most of our nation's disabled do not receive dynamic rehabilitation services in sufficient time to prevent permanent disability. They are referred for rehabilitation only after the effects of neglect have manifested themselves —the anatomical deformities, muscle atrophy, physiological degeneration, and other signs of overlaid disability so frequently seen by physical therapists. Although the pathology of many chronic diseases is currently irreversible, their psychic, social, emotional, and economic sequelae need not be.

If, however, we are to make any broad scale attack on the problems of physical disability, we must broaden both our understanding of rehabilitation and its application in general hospitals, so that the costly sequelae of chronic disease can be prevented. Our hospitals complain of overcrowding and the high percentage of their services which go to the care of the chronically ill, but too few hospitals as yet provide the dynamic, integrated services which will permit such patients to leave the hospital.

Somehow, we must come to understand, as professions, as communities and as individuals, and as a nation, that neglect of disability is more costly than an aggressive program of rehabilitation which restores people to lives of productivity and satisfaction. Pressing as the need is for a broader attack on the problems of the severely disabled, we must balance our thinking to include services to those who have not as yet been reduced to the status of severe disability.

To ignore the development of services to this group through failure to expand physical therapy and related services in general hospitals is to guarantee a continued deterioration of many such patients until they too reach the severely disabled category.

The problems medicine faces in meeting the growing incidence of chronic disease and its resultant physical disability are problems which must be faced and solved by medicine as a whole. Just as rehabilitation is the responsibility of every physician, and is not limited to one medical specialty, rehabilitation is the responsibility of every physical therapist whether he works in a rehabilitation center, specialized hospital, general hospital, crippled children's clinic, visiting nurse service or a physician's office.

If patients are to benefit from present-day knowledge of rehabilitation, the concept of rehabilitation and the basic technics must be made a part of all medical care. This Dr. Will Mayo forecast so accurately when he said thirty years ago, "Rehabilitation is to be a master word in medicine." * It should also be a master word in physical therapy.

HOWARD A. RUSK, M.D.
Professor and Chairman,
Department of Physical Medicine and Rehabilitation.
New York University — Bellevue Medical Center

* Mayo, Will, M.D. "Contributions of Pure Science to Progressive Medicine" Journal of the American Medical Association 84:20 (May 16) 1925.

Capt. Amelia Amizich, 4th Army, and Capt. Margaret E. Mahoney, 2nd Army, are shown in the All Women's Golf Tournament held at Fort George G. Mead, Md. (U.S. Army Photograph)

Army Physical Therapists Win Golf and Swimming Honors

Army physical therapists took top honors at the recent All-Army sports meet in the golf and swimming championships. For the first time women competed on an Army world-wide basis and the AMSC officers were prominent in the eliminations and the finals.

Captain Amelia Amizich, Brooke Army Hospital, Fort Sam Houston, Texas, became the first All-Army Women's Golf Champion by defeating Captain Margaret Mahoney, Valley Forge Army Hospital, Phoenixville, Pennsylvania, in the finals at Fort George G. Meade, Maryland. Captain Amizich is also Fourth Army Champion. Captain Mahoney was runner-up in the Second Army championships but came through to play Captain Amizich in the All-Army event. In a tense match "Amy" won her championship by one stroke.

Lieutenant Betty Mullen, Walter Reed Army Hospital, Washington, D. C., swept the field in the Women's Swimming and Diving championships held at Fort Sill, Oklahoma. She was the winner in all four women's events, the 200 meter backstroke, 400 meter individual medley, 100 meter free-style, and 200 meter breaststroke.

In a special event set up by the referee, Lt. Mullen knocked four seconds off the national 50 meter butterfly record but National AAU does not recognize any official records in this event.

Lt. Mullen had just returned from a month long swimming exhibition tour of six European countries as a member of a team sponsored by the AAU in cooperation with the European Swim Federations.

Lieutenant Sheila McDonnell, Walter Reed Army Hospital, was the only woman representative from the Military District of Washington in the All-Army Tennis Tourney. She was defeated in the semifinals.

These Army champions are all graduates of the Army Physical Therapy Course and represent a combined service of twenty-five years. Captain Amizich of Watsonville, California, is a graduate of San Jose State College and has been an Army physical therapist since 1945. She served two years in Europe.

Captain Mahoney has been in the Army the same length of time with two years in Japan. She is a graduate of Michigan State College and claims Whitehall, Michigan, as her home.

Lieutenant McDonnell of Staten Island, New York, is a graduate of Hunter College and has been in the Army since 1952. Lt. Mullen of Weissport, Pennsylvania, is a graduate of Purdue University, has been in the Army since 1954.

Fulbright Lecturers

Teresa Anastasia has just returned from Rome, Italy, where she was a Fulbright Lecturer for the past year. She reports a most interesting and challenging experience. Her work was primarily in cerebral palsy, but found her services in demand from others. Miss Anastasia was on leave from her position in Bellevue Medical Center, New York.

Terry B. Jones is enroute to the University of Rome as a Fulbright Lecturer to take up the work started by Miss Anastasia. Mr. Jones is on leave from State University of Iowa. Mrs. Jones and five children are accompanying him.

Association Activities

Contributions to Second Congress

Since last reported the following contributions have been received:

Western Pennsylvania	$ 150.00
Southern California	429.00
Addoms, Elizabeth C.	20.00
Asarnow, Martin P.	2.00
Balkema, Toinette	5.00
Bowden, Marion L.	2.00
Burger, Virginia R.	2.00
Call, Marion L.	2.00
Elmiger, Ginette	5.00
Frohlich, Hazel W.	2.00
Goldstein, Jeanne	1.00
Monro, Edith	25.00
Nesbitt, Mary	10.00
Short, Patricia	1.00
Tiura, Helen N.	2.50
Wikler, Dorothy	1.00

Total to date from fourteen chapters or districts, and members — $1800.96.

Goal — At least one dollar per member.

Let's Go!

Second Congress World Confederation for Physical Therapy

Scientific Exhibit Space

There are a limited number of scientific booth spaces available for the Second Congress. Application blanks may be obtained from the National Office of the American Physical Therapy Association, attention, Mary Haskell. The deadline for receiving applications is December 15, 1955.

The Scientific Exhibit Committee will make selections based on availability of space and of those which in their opinion offer the greatest contribution to this important section of the Congress. Only exhibits thus selected will be allowed.

Film Theatre

The Committee on Films will receive applications of films to show at the Second Congress of the World Confederation for Physical Therapy to be held June 17–23, 1956. All applications should contain the following information:

1. Title and brief but sufficient description of subject matter covered
2. Length of film (ft.) and time needed to show it
3. Size of film, 16 or 35 mm; silent or sound; black and white or colored

The Film Committee will select those films which in its judgment will be of greatest interest to the audience and which will fit into time allotted. Only films thus selected will be shown. Deadline December 15, 1955.

Technical Exhibits

All inquiries regarding technical exhibits should be directed to Gordon M. Marshall, 30 West Washington Street, Chicago 2, Illinois. Prospective exhibitors are urged to make application *early*.

Association Members Abroad

Mary Haskell, Associate Executive Director, left for Europe August 20 to join Dorothy Voss for a holiday trip through Scandinavia, Scotland and England. Miss Voss recently completed a six months' assignment in Egypt.

They have been royally entertained by physical therapy colleagues and report that the trip is "out of this world."

National Foundation for Infantile Paralysis Travelships

Adelaide McGarrett's program took her on an extensive tour in England, Norway, Denmark, Sweden, and Finland, visiting schools and treatment centers.

Anthony DeRosa left September 16 for a study and observation tour in England, Denmark, Switzerland, Italy and France. Mr. DeRosa attended the Diamond Jubilee Congress of the Chartered Society of Physiotherapy as official delegate of the American Physical Therapy Association.

Rehabilitation is History

May 31, 1955

My dear Miss Elson:

As you know, I have heard my daughter Lucy talk about her work for a good many years. Hence I have become familiar with the medical words used for conditions that happen to people. I've learned to call infantile paralysis "polio"; a spastic child "a cerebral palsy patient"; a shock "a cerebral hemorrhage" and so on. Sometimes I think there are more handicapped people than when I was a child, but maybe more is being done for them.

I have been interested in reading about or visiting places where the patients can have treatment and all the things that are done with braces and apparatus to help people do for themselves.

Recently when I was looking over some things stored in one of my many cupboards, I found this picture. The woman in the wheel chair was a niece of my grandmother, and I used to call on her with my grandmother when I was a child. Her back was broken as she was thrown from a carriage in 1880, when a horse was frightened and ran away. Nowadays you would call her a paraplegic. Anyhow, her husband made the wheel chair for her, using carriage wheels and a seat. She sat in this when doing her housework, and her husband pushed her about our town to church and for shopping. Therefore, what is called "rehabilitation" today has been practiced in New Hampshire before the turn of the century.

I thought you should have this picture as historical data in the American Physical Therapy Association.

Cordially yours,
(MRS.) JULIA M. BLAIR

Peterborough,
New Hampshire

Marriages

Sue Carter, of Chapel Hill, N. C., to R. M. Jordan, Jr., Chapel Hill.
Blanca Class, of Puerto Rico, to Cameron Smith, Center Valley, Pa.
Blanche Coates, of Fort Worth, Texas, to Frederick E. Bunnell III, Tuscaloosa, Ala.
Virginia Congreve, of Chicago, Ill., to Monroe L. Daniel, Chicago.
Nancy Conlin, of Brookline, Mass., to Richard B. Kearsley, Boston, Mass.
Margaret C. Hogg, of Baltimore, Md., to Thompson E. Upham, Washington, D. C.
Marion Kroupa, of Long Beach, Calif., to Victor H. Barton, M.D., Duarte, Calif.
Gwen Leavitt, of Seattle, Wash., to John D. Nystuen, Seattle.
Adriana Maybeck, of Sacramento, Calif., now Mrs. Adriana M. Nittler, Sacramento.
Joan McBratney, of Cambridge, Mass., to Glenn Ewing Behringer, Cambridge.
Suzanne C. Morgan, of Ann Arbor, Mich., to Donald C. Dohoney, Ann Arbor.
Barbara Moses, of Brockton, Mass., to Joseph Delfino, Greenwood, R. I.
Elberta E. Muller, of Beaver, Pa., to Albert W. Hogeland, Jr., Beaver.
Sally Sanderson, of Boston, Mass., to James D. Cutler, Weston, Mass.
Lucille Young, of Seattle, Wash., to Charles Bent, Seattle.

New Student Members

University of Michigan

Frank Baumgartner	Margaret Jock
Joyce Booth	Lorraine Merten
Mary Carlson	Bernice Pericin
Margaret Farrar	Renate H. Quastler
Jean A. Haines	Arlene Roose
Barbara Henry	Margaret Takagi
Mary Louise Hess	Connie Vandeveer
Tim Hyma	Kay S. Wilson

Student Section

Regional Student Editors

Region I—Editor Audrey Haugaard—Simmons College
University of Connecticut
Boston University
Bouve-Boston School
Simmons College
University of Pennsylvania
The D. T. Watson School

Region II—Editor Joan Erback—New York University
Columbia University
Albany Hospital (Russell Sage College)
New York University
University of Buffalo
Frank E. Bunts Educational Institute
Walter Reed Army Hospital (May-Sept.)

Region III—Editor Rae M. Litaker—Duke University
Medical College of Virginia
Charity Hospital of Louisiana
Duke University
Baylor University
Hermann Hospital
University of Texas
Medical Field Service School (Sept.-May)
Brooke Army Hospital (May-Sept.)

Region IV—Editor Carol Vacca
Northwestern University
State University of Iowa
University of Kansas
Washington University
St. Louis University
University of Oklahoma

Region V—Chairman Beverly Kindig—Mayo Clinic
University of Minnesota
Mayo Clinic
University of Michigan
University of Colorado
University of Wisconsin
San Juan, P. R.

Region VI—Editor Lorna Call—Childrens Hospital
Childrens Hospital
University of Southern California
University of California
College of Medical Evangelists
Stanford University
Letterman Army Hospital (May-Sept.)

Student Editor—Beverly A. Kindig

Brooke Army Hospital

April 15, 1955, was a most important date for seventeen students at the Medical Field Service School, Fort Sam Houston, Texas. After eight months in the United States Army Reserve we were graduating from the first or didactic phase of our physical therapy course. By twelve o'clock noon all cars were packed, goodbyes were said, and everyone stopped to take one last look at the MFSS Quadrangle. Memories of classes, parades, lab periods, lectures, exams, coffee breaks, and closely knit friendships raced through our minds.

Now we are ready for our second phase of training, clinical practice. Six students went to Letterman Army Hospital, San Francisco, California; six students went to Walter Reed Army Hospital, Washington, D. C.; five of us remained at Fort Sam Houston to drive three blocks down the street to Brooke Army Hospital.

Our first few days at the hospital were spent getting acquainted with our staff, personnel, the patients, the physical therapy section, and the hospital in general. During this phase we work and observe in a highly integrated program of clinical practice under the supervision of Captain Emily Fairbanks, Acting Chief of Physical Therapy Section; Captain Frances Davison, student supervisor; and other members of the staff. During the first six weeks we attended classes two hours each day. These classes included refresher courses in anatomy, muscle testing, and amputee gait training, mat programs, administration, occupational therapy, and rehabilitation. One of our most interesting courses was what we called Journal Club. Under the direction of Captain Dorothy Peterson, we prepared speeches, wrote abstracts, and gave lectures to our classmates, instructors, and guests. These lectures covered many phases of interest in medical science, particularly in physical therapy.

During the twenty-week clinical period, each of us will spend some time in each of the various treatment centers of the physical therapy section. In the Combined Activities Clinic we treat and observe amputees, crutch walking, progressive resistance exercises, and mat programs; in CAC we also work with the Elgin table and the tilt table. In the other physical therapy clinics we work with hydrotherapy, electrotherapy and electrodiagnosis, massage, thermotherapy, manual muscle testing, muscle re-education, sensory testing, and general therapeutic exercises. Each of us will work on the various wards where we observe the initial therapy, and in some cases set up pre- and post-operative exercise programs. We also observe

surgery and later meet the patients on the wards or in the clinic where we are able to follow their progress and assist in the many therapeutic measures.

These are only a portion of our activities as student physical therapists here at Brooke Army Hospital and in the other army hospitals. We each have individual tasks, experiences, and problems which make our profession very vivid, interesting, and meaningful to each of us. On September 8, 1955, there will be seventeen Army students who will be proud to be physical therapists.

PATRICIA A. LATTA, 2ND LT, AMSC
OLGA T. BURNS, 2ND LT, AMSC

University of Texas

The class of 1955, six members strong, is composed of students from the neighboring states of Texas, Louisiana, and Arkansas. It boasts a first in having the first Negro student to be enrolled in the School of Physical Therapy. I have the honor of being that student. The University of Texas Medical Branch accepts Negroes that are residents of Texas, a practice begun in 1949 in the medical school.

A backward glance at our school year thus far reveals eight months of hard labor — didactic instruction it is called — wherein the "expansibility" of one's intellectual capacity has been sorely tested. To paraphrase Winston Churchill, never before in our scholastic history have we had so much to learn, been asked so many questions, and given so few correct answers. Seriously, the challenge of the past months has been a rewarding experience. We feel that each hour spent learning what seemed like an infinite amount about such things as the physiology and anatomy of muscles and nerves and the indications and contraindications of various treatments, has been invaluable.

Clinical experience will be gained in three institutions. Treatment for cerebral palsy will be observed and practiced at the Moody State School for Cerebral Palsy in Galveston, Texas. At Gonzales Warm Springs Foundation in Gonzales, Texas, emphasis will be on the treatment for polio. At the University of Texas Medical Branch Hospitals, experience will be obtained in working with patients in general medicine, surgery, tuberculosis, neuropsychiatry, orthopedics, neurology, pediatrics, and other specialties.

MARY HELEN MICKENS
President, Class '55

College of Medical Evangelists

The current physical therapy class of the College of Medical Evangelists accepted the self-appointed task of presenting recruitment programs to various high schools and colleges on the west coast. Believing that there are many who would be interested in physical therapy as a career if they knew more about it, the class took one week of their vacation time to tell almost 5,000 students about the advantages of being a physical therapist. There was an enthusiastic response almost everywhere the program was given.

Students, why not try some promotion work. Let's do our part to decrease the shortage of qualified therapists. It is good experience and a lot of fun.

ORAL FISHER
College of Medical Evangelists

University of California

September 1955 brought to a close a memorable year for 22 students in the Curriculum of Physical Therapy, University of California Medical Center in San Francisco. The close of this phase of our professional education brought with it fond recollections of events during the past year and ever present realities of our professional responsibilities in the future.

Our class proudly thinks of itself as the class of transition—last of the old, first of the new. Although we are the fifteenth class to complete physical therapy training at the University of California since this curriculum in the School of Medicine was founded in 1944, we are the first class to be located in the new addition to the U. C. Medical Center, the Herbert C. Moffit Hospital, which was dedicated this spring.

The opening of the towering, 15-story, 500-bed Herbert C. Moffit Hospital and the 14-story Medical Sciences building is considered a notable milestone in the progress of medical science in the West. All the modern facilities for practical proficiency, demonstration, and research are found in this great addition to our Medical Center, and we are proud indeed to be a part of this fine institution.

The new Department of Physical Medicine, in addition to its excellent staff, has the equipment, facilities, and space that any department would be proud of. It includes sections for hydrotherapy, electrotherapy, and therapeutic

exercise, as well as a gymnasium, a therapeutic pool in the Clinic Building, and many special and general treatment booths.

One of our biggest steps this spring was our move from our old headquarters into our new physical therapy classroom—a marvel in modern conveniences. Our favorite feature of the room is that it can be converted easily and quickly from a practical laboratory into a lecture and demonstration room by merely folding our green padded treatment tables into their compartments in the wall. Another excellent feature of the classroom is its proximity to the new Physical Medicine Department, whose facilities are readily available to us for instructional purposes.

The course in physical therapy at the U. C. Medical Center covers a period of one year which is divided into two complete semesters and two summer sessions. We are fortunate in having in our physical therapy curriculum an excellent administrative and teaching staff: Mrs. Margery L. Wagner, Technical Director; Lucile Eising, M.D., Medical Director; and instructors, Lucy V. McDaniel and Meredith Nordschow. Courses in various fields of medical science are given by specialists in their fields.

The fall semester was primarily academic, and included lectures, demonstrations and laboratories in anatomy, biophysics, medicine, pathology, electrotherapy and radiation, kinesiology, physiology, and ethics and administration. The spring semester brought with it lectures, demonstrations, and laboratories in therapeutic exercise, massage, hydrotherapy, nursing, neurology, orthopaedics, surgery, psychology, and the application of physical therapy procedures. It included preclinical training in the Physical Medicine Department of University of California Hospital as well as observation and participation in clinics in the special fields of arthritis, vascular conditions, dermatology, internal medicine, cerebral palsy, and orthopaedics under specialists in these fields. Field trips to special hospitals and classes of professional interest were also on the spring agenda.

During the summer we were scattered throughout the Bay Area in clinical training facilities for 12 weeks. Each of us had three clinical affiliations of four-weeks each, during which we treated patients under supervision, observed demonstrations, attended clinics, observed surgery, and wrote case histories. We attended a bimonthly seminar in the evening at the Medical Center for additional instruction, demonstration, and question and answer periods.

In reply to the comment, "Your year was quite busy," we all join in hearty agreement, but we still found time for many social and athletic activities and all-round good times. Our year has included such unforgettable events as the faculty-student Christmas party, class picnics, beach parties, a get-together on the Berkeley campus, week-end outings and many other enjoyable events. Along with fond memories of our excellent instructors and professional training, we shall always look back on our class of 1955 as one of friendships, cooperation, and unity.

Yes, this has been a truly memorable year for all of us.

PHYLLIS R. RUBIN
Class of '55

"To The Hills"

Two days before the National Registry exam, the staff at Childrens Hospital School of Physical Therapy decided that their laboring students needed some diversified activity. So one evening it was off to the L.A. hills (smog and all) and picnic time. Upon arrival, much to our chagrin, we found the baseball diamond occupied. This, however, did not deter the lucky "13" enterprising students who immediately started a game in the middle of the road. We were delighted to see our grub getter, Miss McDowell, appear with the groceries. Mrs. Dodge, temporary chef and director of the school, proved that she could "bake" hamburgers and hot dogs as well as patients!

After the food was devoured, we descended upon the playground equipment—meant for children of course. Many contests ensued to see who could swing the highest and last the longest. Then with a few of the more courageous and sure footed people leading the way, we scaled a small mountain. A rescuing party was needed for the few who slid backwards three feet to every step. (It really was a steep hill!) The climb was certainly worth the effort though, for we had a panoramic view of the city at sunset. We feasted on the first watermelon of the season, then sat around a huge campfire singing songs, toasting marshmallows, slapping at mosquitoes, and talking shop. Finally we went home, tired but happy, thinking of our aching muscles, instead of their origin and insertion.

P.S. We all passed the registry exam!

MARGE RUNSER
EILEEN BAUMEL
Childrens Hospital, Class of '55

ESTHER STUEWE

Wheeling Secretary

In the Mayo Clinic inpatient department a familiar figure might be seen wheeling back and forth between offices or down the corridors in search of information or therapists or doctors. This would be Esther Stuewe, our paraplegic secretary. She serves as secretary for the staff doctors in that part of the physical medicine department which is located in St. Mary's Hospital.

Esther came to Rochester as a clinic employee in December, 1950; having previously worked in a law office in Minneapolis, she served as a legal secretary at Mayo Clinic. In the fall of 1952, driving through Nebraska on vacation, Esther rolled her new car over an embankment and was taken to the Fremont Hospital. A few days later she was flown back to Mayo Clinic to become a patient in St. Mary's Hospital, a paraplegic with a complete lesion at T-6. This was her introduction to the physical therapy department. She started her rehabilitation work, and in June 1953 returned to full time employment with Mayo Clinic—this time as medical secretary in the physical therapy department. For two years she lived in a convalescent or hospital hotel, but in May of this year she moved into an apartment of her own where she lives by herself, does her own cooking, and takes care of such work as accumulates in average daily living.

Previous to her business experience Esther was in the WAVES for two and a half years with ten months in Hawaii. Released from the Navy she put in another two and a half years at the University of Minnesota, her major courses in business education. As she states it, she was just an average American girl with an average appetite for sports, liking many things but excelling in nothing in particular.

At our P.T. parties and picnics and housewarmings and at work Esther has become so much a part of our group that a gathering without her seems a bit incomplete. She organizes the bowling teams, coaches the girls' softball team — she's there at the games too! — and cheers us all whether the going is smooth or rough. An unfortunate accident brought her to us but we believe ourselves fortunate to have her among us; she is most surely an inspiration to other paraplegics and to physical therapists as well.

BEVERLY A. KINDIG
Mayo Clinic, 1955

Physical Therapy Politics

Horizons are ever broadening for physical therapists. This time it is in politics for the physical therapy students at Childrens Hospital, Los Angeles.

Last year the state of California passed a bill requiring a registration examination of all physical therapists graduating from accredited schools and licensing examinations for those who are practicing physical therapy but have not graduated from approved schools. This was to serve as a means of differentiating between the two groups.

This year several bills were introduced in the state legislature which were of great concern to physical therapists and two of the bills were of special concern to students. One, Senate Bill #30, makes the term "registered physical therapist" illegal and asks that *all* physical therapists, regardless of education and training, be called licensed physical therapists. Thus doctors, patients, and laymen will be unable to tell whether they are getting a "thirty-day wonder" or a physical therapist who is recognized by the American Medical Association. This bill is undesirable to those who will be seeking our services as well as to physical therapists.

Assembly Bill #2022 states that graduates from approved schools may accept employment under supervision pending the results of the first available state board examination. The passage of this bill would be a financial boost to the students who have relied on scholarships and parents' pocketbooks to get through school.

Upon being informed of the proposed bills the students at Childrens expressed their concern and, encouraged by one of the instructors, wrote letters to members of the state legislature. We also enlisted the support of relatives and friends. Perhaps we influenced the voting, perhaps not, but at least we made ourselves heard. As yet, the final vote has not been taken.

BARBARA ANDERSON AND BETTY YAKI
Childrens Hospital, Los Angeles

Duke University

The end of our fifteen months of training in physical therapy at Duke is fast drawing to a close — a reality that ten students considered almost impossible a year ago. As we approach these last few weeks of our training, our thoughts carry us back to October 1954, the month our program began. Since that time we have come a long way and we are greatly indebted to many people who have made our training both possible and successful.

With such a concentrated course as physical therapy, it becomes necessary to utilize all the technics and resources possible to facilitate and stimulate class unity, encouragement, interest, and progress. Throughout our period of training, we have found several ways to achieve these goals.

First of all, we attribute our class unity largely to the periodic social gatherings we maintained throughout our period of training. These meetings were strictly informal and provided an opportunity for each student to exchange his ideas and share his thoughts or air his grievances with other class members. Because of the acceleration of our course, we found it difficult to arrange many such extra-curricular class activities; however, we highly recommend that subsequent classes try this method to achieve unity, relaxation, information, and social insight. Combined student-staff social gatherings, while appreciated and enjoyed, did not lend the same freedom of speech, thought, feeling, and casualness that an all-student get-together did.

Often it becomes necessary to devise some way of making students conscious of the mistakes they make in handling patients or in writing notes in charts or on the department daily registers. Through the ingenuity of some of our staff members, a simple technic was employed which proved to be effective, stimulating, and humorous. A large piece of cardboard was placed conspicuously on the department bulletin board. Across the bottom was placed the names of all students and all staff members. Up the left side of the page was placed a temperature scale. For each error committed in daily record keeping, either by staff or student, the offender's temperature was raised one degree. The offender was told of his error and also shown his temperature elevation on the chart. We, as students, found it very stimulating to compete with the experienced staff in keeping our temperatures down. We would suspect that the same theory might prove equally as effective if each error made in patient treatment or patient handling were recorded in red on the "temperature chart."

Too few of us realize the importance of keeping ourselves well groomed as physical therapists. Our superiors have reminded us often to always be neat, clean, and sparkling. Perhaps at the time those reminders do not impress us very much; however, it is a tremendous reward when we overhear complimentary remarks from hospital patrons we pass in the corridors. We at Duke have had "well groomed" students this past year and we are proud of ourselves. As students, we would like to recommend neatness and personal care as one of the most important adjuncts to any complete physical therapy course.

Our training would not have been complete without the cooperation of our affiliating hospitals and their fine personnel who contributed such an integral part of our total physical therapy education. We had the pleasure of affiliating at the North Carolina Cerebral Palsy Hospital, Durham, N. C.; the North Carolina Convalescent Hospital, Greensboro, N. C.; the North Carolina Orthopedic Hospital, Gastonia, N. C.; the Lincoln Hospital for the colored, Durham, N. C.; plus the Duke Hospital Orthopedic Clinic, Psychiatric Ward, and Occupational Therapy Department. In addition to our affiliating institutions, we have been fortunate to have been invited to attend various conferences including the rehabilitation conferences, the amputee clinics, the neurology and hand clinics, and neurology and orthopedic rounds.

We are happy to announce the addition of Miss Ethel Dreyer and Miss Lola Smith to our physical therapy staff. Miss Dreyer is our new assistant educational director of the Physical Therapy Course while Miss Smith is our new clinical supervisor. Through the combined efforts of our director, Miss Helen Kaiser, Miss Dreyer, and Miss Smith, the 1955–56 students will have

an improved correlation and integration of courses and clinical experience. We of the 1954–55 class are happy to report that several of the suggestions we made to our director are being carried out this coming year and we feel that we have made a contribution to our successors. For instance, we suggested that gross anatomy, physiology, and kinesiology be taught concurrently since all three are interrelated. In the past the three courses have been taught in different quarters.

On behalf of the other members of my class, may I, as their student editor, express our gratitude to our own director and staff members, our medical staff, our affiliating hospitals, and the patients themselves, for providing the background, material, and supervision which has prepared us for service in the field of physical therapy.

RAE M. LITAKER
Duke University

Baylor University

The sixteen students at Grady Vaughn School of Physical Therapy, Baylor University Hospital, have enjoyed a fruitful year both in the classroom and in the clinics. The class started in September of 1954, and will end December 17, 1955, when we will be graduated as Physical Therapists! The class consists of eight boys and eight girls, most of them coming from the southern states — Florida, Georgia, Mississippi, Tennessee, Louisiana, and Texas; however, some Yankees slipped over the Mason-Dixon line to join us from Michigan, Minnesota, and Utah.

We are now engaged in clinical practice and everyone is enjoying the work. Our school is affiliated with six hospitals: Baylor University Hospital, Parkland Memorial Hospital, McKinney and Lisbon Veterans' Hospitals, Cerebral Palsy Center, and Gonzales Warm Springs Foundation. Each hospital is considered to have a different type of physical therapy patient. This gives the students a good over-all orientation of the field and an opportunity to learn from each affiliation.

Gonzales Warm Springs Foundation is of particular interest among affiliations because of the exacting and specialized teaching received there. Each student is given only one patient at Gonzales, and the rest of the time is spent in the classroom. The classes are taught by the heads of the departments which include: occupational therapy, physical therapy, speech therapy, recreational therapy, brace making, nursing, and school. This procedure shows how personnel from all these various fields can work together to form a team in order that the patient may receive the best care possible. It also helps the physical therapist to incorporate special aids which add both functional and psychological value to his work.

Looking back on the classes, it seems everyone enjoyed massage class most of all, with anatomy and kinesiology next in line as favorites. Now that classroom work is over most of us are busy with case studies and trying to crowd in the social extracurricular activities that were missed during school.

The peak of success in the whole year came when we received word from the Registry that everyone in the class had passed the test.

GAYLE GLIDEWELL
Class representative

Northwestern University

Graduation exercises of the 34th Class in Physical Therapy at Northwestern University Medical School was held at 6:30 P.M. September 29, 1955 in the auditorium of the Veterans Administration Research Hospital in Chicago. Dr. Frederic Jung, Special Lecturer in Physical Medicine and Assistant Secretary, Council on Rehabilitation and Director of the Physical Laboratory of the American Medical Association gave the address to the graduates. Dr. Ben L. Boynton, Medical Director, Professor and Chairman, Department of Physical Medicine awarded the diplomas, and Miss Beatrice Marks, President of the Illinois Chapter, American Physical Therapy Association, pinned on each graduate the Membership Insignia.

New Publication for Polio Patients

Raymond Cheever, who contracted polio in 1952, is publisher and editor of a new magazine, "Polio Living." The editorial slant is on polio success stories, polio research, jobs for polio patients, etc.

The first issue features articles by Dr. Norman Vincent Peale and Bill Cullen, popular T.V. and radio panelist and disc jockey. The little magazine (digest size) will be of interest to physical therapists and their patients. For further information write to

Mr. Raymond C. Cheever
Publisher and Editor, Polio Living
12 Ryan Drive
Bloomington, Illinois

Index to Current Literature

(continued from page 649)

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Physical Therapy Programs—1956

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*Accepts women students only.

Please direct all inquiries regarding tuition, entrance requirements and other specific information to the school and *not* to the American Physical Therapy Association.

Abstracts

Diagnosis and Treatment of Idiopathic Facial Paralysis (Bell's Palsy).

Fred B. Moor, J.A.M.A., 157:1599-1601, April 30, 1955.

Bell's Palsy, or idiopathic facial paralysis, is a paralysis of sudden, usually unexplained, onset with or without pain. The involved side of the face becomes immobile and expressionless. The duration varies from two weeks to six months, depending on the extent of damage to the seventh nerve. Complete recovery occurs in 80 to 90 per cent of cases. The condition occurs more frequently in women than men. Its cause is unknown. Local chilling may be a causative factor. Apparently there is edema and pressure on the seventh nerve.

History, physical examination, and electrical testing are important features of the diagnosis. Electrical tests may show loss of faradic sensitivity or an altered chronaxie. Electromyography may be an aid, but it is a painful procedure and an added expense.

Prognosis depends on severity of the lesion and on the manner of treatment. If reaction or degeneration is present, recovery usually takes several months. For patients who do not respond to conservative treatment, surgical decompression of the seventh nerve is recommended. In patients seen early, Bierman recommends intensive physical therapy daily for two weeks, then three times a week for four more weeks. A 69 per cent recovery rate was found after this regime. Procedures in treatment include local heat, electrical stimulation, massage, exercise, and splinting. Local heat is used to prepare the facial muscles for electrical stimulation and massage. Infra-red lamps or hot packs may be used. Vigorous electrical stimulation is necessary to prevent atrophy of denervated muscles. Three brief periods of stimulation daily are recommended. Frequency is more important than duration. Massage is of definite value. The chief movement is gentle pétrissage and is directed against gravity to decrease facial sagging. When voluntary motion appears, the patient should be encouraged to exercise the facial muscles on the involved side. Exercise should be done in front of a mirror, and under the direction of a physical therapist. Most splinting is ineffective in Bell's Palsy, except for adhesive strappings, which are not usually well tolerated. The eye should be protected by a patch or goggles.

It is felt that complete recovery is possible if therapy is started early. Delay in treatment usually prolongs the duration of paralysis. Physical therapy helps to maintain the muscles in condition pending the time when reinnervation occurs.

Prognostic Value of Sensory Defect in Rehabilitation of Hemiplegics.

Charles Van Buskirk and David Webster, NEUROLOGY, 5: 407 - 411, June, 1955.

This is a study of 35 male patients at the Minneapolis Veterans Administration Hospital; except for two, all suffered from hemiplegias as a result of vascular accidents. Their disability had been present from 9 days to 7 years at the onset of the testing period. The purpose of the study was to correlate the relationship of sensory deficit to recovery of function and the rehabilitation process.

The patients were examined weekly for pain, two-point discrimination, and vibratory sensations. Homologous areas of the upper extremities were compared. Pain thresholds were determined by means of radiant heat, the intensity of which could be varied without changing its frequency distribution. Vibratory sense was measured with the standard tuning fork of 128 vibrations per second, and the time the patient could perceive the stimulus was recorded electrically. Two-point discrimination was measured by a dull-point compass. The final record was made after a practice session and three consecutive trials.

Eighty per cent of the patients were found to have impaired sensation, but none had complete loss of any one sensation tested. Types of sensory disturbance were all impaired in about equal frequency. Rate of recovery to normal was 2 months for pain, 1½ months for two-point discrimination and 4⅜ months for vibratory sense. The length of hospitalization before rehabilitation and discharge corresponded similarly in time.

Thus it was concluded that since those sensations (pain and vibration) which are mediated by subcortical areas, recover more slowly, parietal lobe function was significant in the prognosis for rehabilitation. Flaccidity was also shown to exhibit an unfavorable influence, especially when it existed in the lower extremity. It was recognized that lack of good prognosis could depend on the size of the lesion. Retraining was considered important in the recovery process of sensation. Therapy also helped in return of function in most cases. Those patients who exhibited no improvement had had their disability 3 months or more.

The final conclusion was that persistent sensory loss can be correlated with a poor prognosis for rehabilitation.

Congenital Diaphragmatic Hernia in a Premature Infant.

C. L. Clinton-Thomas, LANCET, 1: No. 6875, 1155-1156, June 4, 1955.

There has been a progressive decline in the mortality from congenital defects of the diaphragm. Early diagnosis and immediate surgical intervention after birth have been largely responsible for saving the life of these infants. Better understanding of preoperative and postoperative treatment and improved technics of surgery and anaesthesia have made it possible and desirable to operate soon after birth. Operation in the first two days of life has an advantage in that the intestines are not yet distended with gas and repositioning is easier.

In this paper one case is reported in which conditions were not ideal. There was no specialized nursing service, no modern anaesthesia, and the case was not correctly diagnosed until 12 days after birth. The patient, a premature male Indian infant weighing 4 pounds 8 ounces was noticed to be cyanotic on the third postnatal day. The cyanosis, respiratory difficulty and gastrointestinal problems persisted.

Repair of the hernia was completed in two operations. After the left phrenic nerve was crushed, the abdomen was opened. Much of the abdominal content had herniated and during the first operation, as much as possible was returned to the abdominal cavity. The hernia was partially repaired, and the ventral hernia repaired 14 days later. The patient recovered satisfactorily, except for paralysis of the phrenic nerve.

Pathology of Poliomyelitis Treated in Respirator.

K. Scharenberg, J. NEUROPATH. & EXPER. NEUROL., 14: 297-304, July 1955.

The respirator treatment of poliomyelitis prolongs life and therefore permits the nervous tissue to remove destroyed cells and structures and to organize these nervous centers. Histologic studies of the nervous tissue of respirator patients would show these changes. Five cases were examined who died 5 weeks, 3 months, 4 months, 12 months and 24 months, respectively, after onset of acute symptoms. The numerous histologic findings are briefly described in this paper.

These findings indicate that the nervous system in chronic poliomyelitis continues to undergo degenerative and reparative changes. These changes vary in different centers of nervous tissue. The most severe destruction was suffered by the spinal cord, especially in the anterior horn cells which contained numerous cavities. In the white matter of the cord the histologic character was that of a secondary degeneration of the neuraxis. Most of the damage was suffered by the myelinated fibers, while many of the unmyelinated fibers survived. Minor changes are described in the medulla, midbrain, and basal ganglia. Again, in the motor area of the cortex there were marked changes, and particularly in area 4. Also, the damage was very extensive in the white matter of the hemisphere, corresponding to area 4.

Mental Status of Children with Convulsive Disorders.

H. M. Keith, J. C. Ewert, M. W. Green, and R. P. Gage, NEUROLOGY, 5:419-425, June, 1955.

The purpose of this survey was to determine the mental status of children who had convulsive disorders and to relate their mental status with other clinical factors. At the Mayo Clinic from November, 1950 to December, 1951, 296 children were studied. They consisted of both inpatient and outpatient groups; 56 per cent were male and 44 per cent were female; the age range was from 2 months to 14 years. To measure the mental status, psychologic tests were used on 121 patients and the physicians' evaluation on 175 children. There were three classifications of mental ability: retarded, dull-normal and average or better.

Of the 296 patients, 37.5 per cent were graded as retarded, 14.5 per cent as dull-normal, and 48 per cent as average or better. This is a greater incidence of mental retardation among children with epilepsy than in children without convulsions. Other factors were significant. Younger children tested lower than those of the older age groups. Mental retardation decreased with increasing time after the original onset of convulsions. Children with more frequent attacks and those who showed abnormal electroencephalograms had a lower mental status. In patients with symptomatic convulsive disorders, 73 per cent were retarded as compared with only 22.2 per cent of the idiopathic group. There was no significant difference in the mental status of boys and girls. Likewise not significant was mental status as related to petit and grand mal seizures.

Conditioning Techniques in the Treatment of Writer's Cramp.

L. A. Liversedge and J. D. Sylvester, LANCET, 1: (No. 6875), 1147-1149, June 4, 1955.

Writer's cramp has been said to be of a psychoneurotic nature. In this study of 20 patients, many showed no evidence of psychological disorder. There was, however, much variety in the pattern of emotional and mental makeup. It was believed that the cramping may be explained by the establishment of a conditioned reflex. The stimuli for the reflex are: (1) tactual stimulus of the pen and (2) tactual stimulus of the hand touching the paper. Treatment was aimed at the extinction of the conditioned reflex—a "deconditioning"—which was causing the cramping and consequently interfering with the writing.

The two aspects of writer's cramp are: (1) tremor with variable rate and amplitude and (2) spasm of hand muscles and sometimes forearm and arm muscles. During the treatment, an electrical arrangement of writing implement and hand was set-up. The patient was then asked to trace some lines. If tremor was noted and the subject deviated from the lines, he received a slight shock. To correct the spasm he likewise received a shock with excessive thumb pressure.

Seven patients were treated with this technic. Each treatment lasted for about 30 minutes and was repeated daily for several weeks. All patients had writer's cramp which had been a handicap for the past three to ten years. They evidenced tremor, cramping and pain; their writing became illegible after short periods, and some had to stop work. After treatment, there was moderate to good improvement. One patient who had not worked in three months returned to work and was writing for long periods of time.

It was thought that this type of treatment helped clinically . . . irrespective of the initial cause of the writer's cramp. In the event of relapse, retraining may be necessary.

Rotator Cuff Tendonitis and Bicipital Tenosynovitis

Norman C. Delarue, CANAD. M. A. J., 73:201-207, August 1955.

The shoulder is subject to the process of attrition due to the great range of motion and the resultant friction between soft tissues and bony and ligamentous structures. Heavy physical work will throw a very great load upon the muscular supports of this joint. The attrition changes develop in two localized areas of the shoulder joint complex; in the rotator cuff and the bicipital tendon.

Dr. Delarue discusses the mechanism of rotator cuff tendonitis and bicipital tendonitis, and states that differentiation in anything but the advanced stages of tendon rupture, dislocation or calcareous bursitis is largely academic because the treatment is identical in both diseases.

Treatment is designed to meet two specific needs: (1) relief of the subjective complaints of the patient, and (2) prevention of permanent limitation of function of either minor or major proportion. Pain may be relieved by application of moist or radiant heat and massage. Rest which is necessary until the initial reaction subsides may be obtained by use of a sling. As soon as possible, active exercise should be resumed. It is only through active exercise that limitation of the scapulohumeral motion may be minimized. Exercise should begin one or two days after onset.

Complete ruptures of the rotator cuff are best handled by early suture and resumption of activity within ten days to two weeks after surgery. Complete restriction of glenohumeral motion which is the dreaded out-come of these degenerative diseases is now felt to result from the intra-articular synovial changes, most frequently seen in bicipital tenosynovitis. Once fibrosis ensues, reversal of the pathological processes becomes impossible, and manipulation under anaesthesia may be the only recourse in therapy although it usually has little to offer in improving the range of active movement possible. Prevention of gross fixation is imperative. This is why active exercise is important in the earliest stages of these diseases of attrition.

The Effectiveness of Microwave Diathermy Therapy as a Hyperthermic Agent upon Vascularized and Avascular Tissue

Alfred W. Richardson, BRIT. J. PHYS. MED., 18:143-149, July 1955.

Much of the heat therapy used in physical medicine is designed to increase flow of blood through skeletal muscles. To accomplish this flow increase, the radiation must be able to penetrate deeply into the tissues, heat must be produced as a result of the penetration, and the resultant heating will be a function of the induced temperature gradient and heat loss. The loss of heat is the result of convection loss due to circulating blood, radiation loss into surrounding environment from the surface of the body, and by conduction into surrounding tissue.

The author studied the effect of microwave on the body in relation to the quantitative production of heat in individual body tissue, the effect of the flow of blood on such heat production and the temperature gradient so induced.

From the data obtained in the study the author suggests a number of principles regarding microwave irradiation of tissues. (1) Microwaves effectively increase blood circulation in the vascularized periphery. (2) Blood circulation aids in controlling the induced hyperthermia in these areas. (3) The blood flow increase continues after termination of microwave exposure. (4) With tissue heating, blood flow acceleration is not a linear function of temperature increase, but requires a threshold of hyperthermia (approximately 43 degrees C in these studies) to initiate blood flow acceleration. (5) Avascular sites in the body may possibly become areas of concern in regard to excessive heating unless precaution is instituted, since blood circulation contributes to the control of excessively induced temperature.

Ultrasonic Energy for Therapeutic Purposes.

Report of the Council on Physical Medicine and Rehabilitation, J.A. M.A., 157:1407-1408, April 16, 1955.

Ultrasound currently used for therapeutic purposes consists of mechanical vibrations with frequencies ranging from 700,000 to 1,000,000 cycles per second, produced by a piezoelectric crystal mounted in an applicator. These ultrasonic waves do not pass through air or a vacuum but require a material medium for their transmission.

Although sufficient information is lacking regarding the action of this energy on tissues, it is believed that the chief physiological effect is thermal. Localized temperature rises have been recorded, occurring more readily at interfaces formed by junction of tissues of different densities, such as muscle-bone junctions.

Ultrasonic energy may be safely used as an adjunct in relieving such symptoms as soreness and tenderness associated with bursitis, periarthritis, fibrositis, and myositis; rheumatoid and osteo-arthritis; nonparalytic forms of neuritis and painful neuromas of the stump. The use of ultrasound energy for cutaneous affectations and occlusive peripheral vascular disease is as yet controversial. The application of ultrasonic waves for therapeutic purposes is contraindicated in and about the brain, spinal cord, eye, ear, accessory nasal sinuses, heart, reproductive organs, epiphysis of growing bone and large autonomic structures. It is also contraindicated in the region of an acute infectious process, a malignant lesion, inadequate circulation or impaired sensation.

Since excessive amounts of ultrasound can be destructive to tissues and since pain indicates that an excessive amount has been applied, the production of pain during an ultrasonic application should be avoided. One must rely on the sensation of the patient and keep the dosages within comfortable tolerance in order to avoid pain or the sensation of excessive heat, since the meter does not indicate the actual energy absorbed by the tissues. The length of the treatment is empirical, varying from 3 to 10 minutes depending on the intensity employed and the area to be treated.

Head Injuries in Children; Falls from Moving Automobiles.

Luke M. Kitahata, Eben Alexander, JR., and Courtland H. Davis, JR., NORTH CAROLINA M. J., 16: 180-183, May 1955.

This report is a statistical study concerned with 12 children who fell out of the rear door of a forward-moving 4-door sedan automobile. There were 9 boys and 3 girls in the study ranging from 2½ to 7½ years of age. The children were seen on admission to the hospital and at indicated times up to 12 months after the accident.

All of the children had some initial injuries including fractured skulls, with the location of the head injury variable. There were no other fractures. The duration of unconsciousness varied from a few minutes to a few hours. Brain damage and visceral injuries were not usually considered serious. All children suffered contusions, abrasions, and lacerations. One child had a brachial plexus injury and one was partially aphasic.

A comparison of the details of the accidents and the clinical picture was made. The speed of the moving automobile was not consistent with the severity of the injury except that 3 children who fell from a car moving at 15 miles an hour were not unconscious. In 3 of the 12 cases an adult was riding in the back seat with the child when the accident occurred. All accidents occurred within 30 miles of the hospital, therefore, it was assumed such accidents happen frequently. In all cases but one, the cars were models older than 1948 and the back door hinged at the rear and thereby, when opened, was pulled outward by the wind.

It was suggested that this type of accident is almost completely preventable. Recommendations were: (1) back doors should be hinged in the front, (2) if children are in the back seat alone, the doors should be locked from the inside by either removing the inner handle or using electric door locks.

A New Punch-Biopsy Technic for Diagnosis of Joint Diseases.

H. F. Polley, W. H. Bickel, and M. B. Dockerty, POSTGRAD. MED., 18: 47-65, July 1955.

Serial studies of synovial changes at various stages of rheumatic diseases and other conditions with synovitis can be investigated with the aid of punch-biopsy. Synovial specimens obtained by this method are comparable to those obtained by arthrotomy. By using this method, articular disease may be studied more advantageously and more completely. It permits further evaluation of therapeutic effects.

This is a scientific exhibit which was presented at the meetings of the American Medical Association in 1954 and the American Academy of Orthopedic Surgeons in 1955 by the Mayo Clinic. The illustrations and accompanying captions describe this new technic, step by step, and illustrate its value in differential diagnosis and in clinical investigation. It is a relatively simple and safe procedure. It may be performed with little inconvenience on ambulatory as well as hospitalized patients. The usual operative incision and morbidity of arthrotomy are avoided.

Bronchiectasis.

Donald E. Olson, POSTGRAD MED., 18: 66-72, July, 1955.

This is a rather inclusive paper on bronchiectasis which comes from Fitzsimons Army Hospital and the University of Colorado School of Medicine. The author discusses its clinical manifestations, physical findings, roentgenographic findings, prognosis, complications, and management.

Bronchiectasis is literally defined as dilatation of one or more bronchi. The only definitive treatment for bronchiectasis is the surgical removal of the involved portion of the lung. Medical management consists chiefly of the use of antibiotics and postural drainage.

References are given on segmental postural drainage. In general, it is stated that the basilar segments of the lower lobes are best drained by having the patient lie over the bed with flexion at the hips of 80 to 90 degrees. If the superior segments of the lower lobes are involved, drainage is best accomplished by having the patient lie prone. The rare upper lobe bronchiectasis is best drained by having the patient sit in the upright position. Most patients can be maximally benefited by proper postural drainage four to six times per day for periods of 10 to 15 minutes each.

Linear Growth of Long Bones of Extremities from Infancy Through Adolescence

Marion M. Maresh, AM. J. DIS. CHILD., 89: 725-742, June 1955.

Studies of the long-bone growth of children have shown that such growth is both complex and orderly. Three age periods seem to describe best the linear growth process—an infancy period, a childhood period, and the adolescent years.

In infancy, growth in length is seldom along channelled zones as set up from percentile lines. Instead, the rate of growth of one or more of the long bones of the extremities is sometimes faster than that of the group average, sometimes slower, and sometimes reveals periods of either temporary acceleration or deceleration. Variations in percentile levels for the humerus, radius, femur, and tibia were observed that might be as great as 50 percentiles, but at the extremes of the range, the first and fourth quartiles, there was usually little variability. One might consider this infancy period as one of adaptation to the complex factors that may influence growth.

Beginning at about 3 or 4 years of age and continuing to the prepubescent years, the childhood patterns of long bone growth were found to be remarkably stable and orderly. The growth curves for all four bones were usually alike descriptively. "Latency" would be a good term for linear physical growth in the childhood years.

The adolescent years are again a time period of more turbulence, with the variations in the onset, the magnitude, and the duration of the adolescent growth spurt, along with what appears to be the emergence of variations in segmental proportions that will be part of the adult body build. A comparison of heights during childhood and at the end of long-bone growth shows a good degree of correlation, with about half of the group having early adult heights that were not more than 2.5 cm. different from the values that were predicted on the basis of this correlation. If, however, the data are separated into two groups—those maturing at earlier than average age, and those who were later than average in maturing—significant differences were found. In general, the early-maturing child will probably be shorter as an adult than would have been anticipated from the height as a child, and the late-maturing child will probably be taller as an adult than predicted from the childhood height.

The early adult percentile levels for the four long bones followed this same distribution. The adolescent period remains one of intense interest to the student of physical growth because of its predictabilities and its unpredictabilities.

Neonatal Torticollis

W. B. Kiesewetter, P. K. Nelson, V. S. Palladino, and C. E. Koop, J.A.M.A., 157: 1281-1285, April 9, 1955.

An investigation is made of the possible relationship between the fibrous tumors of the sternocleidomastoid seen in the neonatal infant and the classical muscular torticollis of older children. The fibromas are rarely present at birth, but are seen in infants between 2 weeks and 2 months of age as firm, discrete masses lying in the sternocleidomastoid muscle. They may disappear spontaneously in four to eight months, but changes occur which are similar to those of torticollis in older children. There is shortening of the sternocleidomastoid muscle resulting in asymmetry of the face and cranium.

The authors considered case material derived from 46 patients with two aspects in mind: (1) Is there a part played in this condition by abnormalities of pregnancy? (2) Does removal of the fibroma neonatally prevent subsequent torticollis? Regarding the pregnancy it was found that the majority of the children were delivered at term. There was, however, a high incidence of abnormal presenting positions and difficult deliveries. There were minimal abnormal signs or symptoms at birth, but a high incidence of them early in life. In most cases the fibromas were removed. The patients evidenced replacement of striated muscle by fibrous tissue and atrophy of surviving muscle fibers. There was minimal occurrence of edema and

inflammatory infiltrates. There was evidence of old hemorrhage in 25 per cent of the cases.

The authors conclude that the origin of fibromatosis of the sternocleidomastoid is the result of pressure over an area of muscle, producing ischemia of a portion of the vascular bed. An abnormal position of fetal head in relation to the fetal body leads to pressure on the blood supply. The abnormal delivery is a symptom of a pre-existing condition resulting from uterine malposition coupled with resulting ischemia and fibrosis of the muscle. The fibrosis in an infant diminishes the capacity for growth in the sternocleidomastoid muscle, which may result in marked torticollis in the older child. Almost all who have had the mass removed do not develop any torticollis, and therefore, it is concluded that early operation is the treatment of choice.

Mechanisms In Depression.

Jacob O. S. Jaeger, AM. J. PSYCHOTHERAPY, 9:441-451, July 1955.

Depression is an affective state representing instinctual conflicts and the anxiety aroused by them, or a defence against such conflicts. The problem of abnormal depression bears important consideration since it can occur frequently and can threaten life. There are two basic types of depression. The so-called endogenous or constitutional depression is the type where there is no external or precipitatory factor present. The patient's conflict is internal and he feels "I have lost everything; I am unworthy and do not deserve anything." With the second type, reactive depression, an external cause precipitates the depressed state. The traumatic loss or frustration is external and the person feels "I have lost everything and the world's empty."

With a neurotic depression, the ego makes a desperate attempt to gain support in the conflict with the superego. Satisfaction of the superego is necessary to maintain self-esteem. If this self-esteem is lost by frequent failures, the superego is damaged. In more severe cases, the psychotic depression is actual loss of self-esteem with loss of object relationships and regression to objectless existence. If self-esteem is not restored the ego replaces the superego and the patient has guilt feelings. Self-punishment in the form of suicide or rebellion and murder may result. In cases of melancholia there is an inner unconscious component rather than a real external object. The ego represents itself as a worthless character with a delusion of punishment. Again there is a conflict suggesting suicide or murder.

Procaine Amide in the Treatment of Myotonia.

N. Geschwind and J. A. Simpson, BRAIN, 78, Part I: 81, 1955.

Delayed relaxation after strong voluntary contraction is characteristic of certain disorders of muscle, the myotonias. The strong involuntary after-contraction is of a tetanic nature and myogenic in origin. It is desired that a drug be used to prevent the repetitive action potentials, but not interfere with neuromuscular transmission and reduce voluntary muscle innervation.

Procaine amide was selected for this clinical study. After a preliminary investigation of the intravenous injection of procaine amide with 2 patients, additional clinical trials were carried out. There were 9 patients, 7 of whom had classical dystrophia myotonia. Their ages ranged from 16 to 59 years with symptoms being present for 2 to 25 years. Seven were males and 2 females. The procaine amide was administered orally in 25 gram tablets beginning with 2 tablets four times daily and increasing to 4 tablets four times daily. The patients were seen daily for two weeks and at longer intervals after discharge. Results were based on: (1) Subjective reports of the patient, (2) observed rate of relaxation after a strong three-second voluntary contraction, and (3) electromyographic and ergographic tests.

The patients reported that their daily living was made easier because of decreased stiffness. There was no loss in muscle strength as tested by the ergograph. The E.M.G. showed evidence that active myotonia was abolished. The best effect from the drug was found between one hour and six hours after administration. Four tablets per dosage was the maximum required for significant reduction in the myotonic symptoms. If the drug was withdrawn, there was a complete recurrence of symptoms within 24 hours. Control of symptoms was evidenced for the seven-month trial and 8 patients desired to continue treatment. The infrequent undesired side effects of nausea, diarrhea, faintness and insomnia were not considered too serious and were somewhat corrected.

The clinical trial confirms that procaine amide taken by mouth is effective in controlling the myotonic phenomena. A suggested dosage is one which reduces the symptoms but does not cause undesired side effects.

Training In the Use Of The Functional Assist For The Flail Hand

Marietta Doescher and Odon F. Von Werssowetz, AM. J. OCCUP. THERAPY, 9: 115-117, May-June 1955.

At Gonzales Warm Spring Foundation an apparatus was devised to assist prehension of fingers. The device is used when there is no muscle power in the hand, but the patient has available muscle function elsewhere in the body. Meticulous training of an interested patient is vital to the successful use of the apparatus.

This functional assist is composed of three parts. (1) The terminal device consists of a static prong on the thumb and side of the hand and a movable pincer attached to a finger or fingers. The tips of fingers and thumb are not covered. (2) The terminal device is attached to a supporting cuff. (3) A transmission mechanism leads to shoulders or lower extremities where there is some voluntary function to control the terminal device.

One patient who has used the apparatus successfully is described. She had been left severely paralyzed after poliomyelitis. There was no hand function. After she was fitted with the hand device, she underwent intensive and progressive training in its use. She used internal and external rotation of the thigh to open and close the hand device. As time progressed and with other functional aids she learned to perform fairly well many activities of daily living and recreation including eating with a special spoon, drinking from a cup, washing face, brushing hair, playing cards, writing, and various handicrafts.

For the successful use of a device such as this, the patient's interest and the willingness to practice are most important. The device is not the final answer to the problems of the flail hand. Experimental work is in progress to improve its functional ability and cosmetic effect.

Language Disturbances in Cerebral Disease

Pierre Pichot, ARCH. NEUROL. & PSYCHIAT., 74: 88-91, July 1955.

A comparative study was made on the pattern of intellectual functioning between groups of senile and arteriosclerotic patients. The first test given was a vocabulary test in which the patient was requested to define words. The second test given was a nonverbal task requiring both reasoning and visuoanalytic abilities. This test is considered to be an excellent measure of efficiency of intellectual function.

The results show that the vocabulary level of the arteriosclerotic patients was decidedly lower than that of the senile patients, but that there was no significant difference in general intellectual efficiency which was lower in both groups.

The following interpretation of these findings is advanced by the author. The much more striking decline in the vocabulary level of the arteriosclerotic patient is due not only to the factor of general intellectual impairment but also to a supplementary specific language impairment. This is designated as "latent aphasia." Whereas, in the senile patient, the decline in vocabulary level, if it exists, is due solely to general intellectual impairment. Anatomical findings are consistent with this hypotheais. In the arteriosclerotic patient the lesions are likely to be localized predominantly in the temporo-occipital region, while in the senile patient the cortical lesions are generally diffuse.

Intervals Between Onsets of Multiple Cases of Poliomyelitis in Families.

Arthur S. Littell and George V. Smith, AM. J. HYGIENE, 61: 302-313, May 1955.

A direct measure of the incubation period of a communicable disease is the interval between 2 successive cases in a family; if the first case got the disease from someone outside the family, and the second case, who was not exposed to the outsider, obtained the infection from the first case. However, if 2 cases are effected simultaneously, the interval is the difference between incubation periods. The intervals between the onsets of several cases of a disease within the same family, therefore, depend upon the time each susceptible person was effectively exposed and the incubation period of the disease.

This statistical study was based on familial epidemics of poliomyelitis in Cuyahoga County, Ohio, from 1941-1952. Included in the survey were 75 families with 2 cases each of poliomyelitis, 7 families with 3 cases, and 4 families with 4 cases. It was desired to study the proportion of second cases in a family which were infected from the first case and the proportion which were infected simultaneously with the first case.

The assumption that the distribution of intervals between primary and secondary cases for disease is about the same as the distribution of incubation periods. Therefore, a case is infectious only at about the same time symptoms appear. This is not an established fact for poliomyelitis. The median incubation for poliomyelitis is said to be 12 days with a dispersion factor of 1.5. The average interval between successive cases of poliomyelitis in a family in this survey was 7 days. Therefore, it was believed that in most instances the several cases in a family received their infections simultaneously.

Atypical Neuralgias of the Head. Headaches, So-Called Migraine, and Complications of Whiplash Injuries and other Cervical Trauma

Frederick L. Reichert, AM. J. SURG., 89: 1203-1211, June 1955.

Relief of atypical neuralgias of the head and face, occipital neuralgia and migrainous headache may be secured by painstaking and accurate injection of 2 per cent procaine into the sensitized trigger points, repeating the injections if necessary until all trigger points have been abolished.

The sensitized trigger points are caused by trauma, toxins, or compression of the small unmyelinated sympathetic fibers in and accompanying blood vessels, and in the subcutaneous tissues, muscles, fascia, ligaments, and attachments of muscles to bone. The usual location of these trigger points is discussed.

Sensitized areas from strains or sprains, such as occur in whiplash injuries, involve the deeper posterior rotator neck muscles, and trigger points are found in the interspinous ligament and its bursae, between the spines of the cervical vertebrae and the strained attachments of muscles to the transverse processes of these vertebrae.

From these locations may originate the referred pain to the occipital and frontal parts of the head, face, neck, shoulders, and even down the back.

To prevent recurrence of neuralgia after trigger point injections, vitamins and adrenal cortex and/or anterior pituitary preparations are given.

Recently the use of Rauvolfia root or its alkaloid, reserpine, for suppression of the sympathetic predominance at the hypothalamic level has served better than anterior pituitary substances in relieving headache, crying, or the profuse perspiration that some patients experience.

Variations in the Plasma Fibrinogen During the Course of Multiple Sclerosis.

Ib Persson, ARCH. NEUROL. & PSYCHIAT., 74: 17-30, July 1955.

This article is based on Putnam's theory that in multiple sclerosis thrombi are formed in the small veins of the central nervous system and consequently cause the formation of the characteristic plaques. It is important to find out whether in multiple sclerosis there are factors which might explain the origin of these thrombi. Therefore, the purpose of this study is to assess the values of the plasma fibrinogen found during the course of the disease.

The sedimentation rates and the plasma fibrinogen content were estimated in 16 patients with multiple sclerosis. The results show that variations in the plasma fibrinogen occur in the course of multiple sclerosis and that exacerbations of the disease are accompanied by rises in the plasma fibrinogen. On the other hand, not all periods of high plasma fibrinogen are accompanied by exacerbations. It has also been shown that in the majority of chronic diseases the fibrinogen levels are higher than in normal persons. Therefore, this rise cannot be regarded as specific for multiple sclerosis. The conclusion is reached that the periodically raised plasma fibrinogen content is most likely to be an accompanying phenomenon to the actual cause of the disease rather than a causal factor.

Statistical Control Studies in Neurology. VI. Bell's Phenomenon.

M. J. Madonick, ARCH. NEUROL. & PSYCHIAT., 74: 92-96, July 1955.

Bell's phenomenon is the upward movement of the eyeballs with closure of the lids. The presence or absence of this sign may be of clinical value. Due to the absence of this sign in many patients with no known neurological disease, this study was made to obtain the frequency of Bell's phenomenon and to determine whether its absence can be correlated with other factors such as age, sex, and neurological findings.

The results of the test show an increase in the absence of this sign with an increase in age. There was no difference in the incidence according to sex. No relationship was found between Bell's phenomenon and the ankle jerk.

A most interesting part of the article was the discussion of various suggestions proposed as a basis for Bell's phenomenon. The author favors the view that Bell's phenomenon is an associated movement occurring with closure of the lids.

On the Treatment of Intertrochanteric Femur Fractures with Active Movement Therapy.

K. A. Solonen, ACTA ORTH. SCANDINAV., 24:310-322, 1955.

A survey and discussion of the various methods used in the treatment of femoral fractures of the trochanteric region are given in this article. Most authors at present favor the operative rather than conservative treatment. The operative treatment has many advantages, including early mobilization. On the other hand certain complications may develop.

The author's treatment of choice is a mobilization method. A Kirchner wire is bored through the femoral condyles and traction is applied from it longitudinally along the thigh. The movements of the knee thus remain completely free. Toe traction is applied at the same time which prevents equinus deformity but allows ankle movements. Pillows are placed under the thigh so that the hip is flexed about 45 degrees and is fixed in moderate abduction. From the very beginning the patient is encouraged to perform flexion and extension of the knee and ankle movements, but without moving the hip.

Considerable attention is paid to the mobilization of all unaffected joints and to increasing the patient's activity. After three to four weeks the pillows are removed and flexion-extension movements of the hip are allowed. After six to eight weeks the tractions are removed and the patient is taught to ambulate with crutches. Weight-bearing is not allowed before the twelfth week. The results have been good and the patients have remained in good spirits.

The Fractured Rib—A Significant Injury.

R. L. Rapport, R. B. Allen and G. J. Curry, ARCH. SURG., 71: 7-13, July, 1955.

The fractured rib is often an injury of considerable consequence, yet it is frequently neglected. Because of the proximity of the thorax to vital organs, complications of fractured ribs are often serious and associated with a relatively high mortality rate.

A survey was made between 1947 and 1952 of 732 patients with fractured ribs. Of these, 490 were inpatients and 240 were outpatients. Of the inpatient group, 41 per cent presented some complication associated with the fractured rib. These complications were divided into five anatomical groups.

1. Listed as chest wall injuries, 67 patients had subcutaneous emphysema and 21 had paradoxical respirations.
2. There were 130 patients with pleural complications, including hemothorax, pneumothorax and pleurisy.
3. Pulmonary complications occurred most commonly, comprising 32.6 per cent of the patients.
4. Occurring rarely were mediastinal complications.
5. Abdominal complications included 58 patients with ruptured abdominal viscera; 7 patients with a lacerated diaphragm, and 23 cases with ileus.

Of the 490 patients admitted to the hospital 34 died. Autopsy was performed in 27 of these. It was established that 10 patients died from causes other than the thoracic injury and in 24 patients the thoracic injury was either the sole or the decisively contributing factor to death. Some of the contributing factors to death seen in autopsy were traumatic wet lung, hemothorax, pneumothorax, ruptured diaphragm and abdominal viscera. It is believed that some patients could be saved if these complications resulting from fractured ribs were appropriately treated.

Treatment of Colles' Fracture

Joseph M. Strong, SURG., GYNEC., & OBST., 101: 107-112, July 1955.

Dr. Strong describes his method of choice in the treatment of the common Colles' fracture. Usually, the function of the wrist may be good and the cosmetic result poor, or there may be poor function with a good reduction of the fracture. In the 200 wrists that he has treated there have been only a few failures.

To obtain a good reduction of a Colles' fracture, it is necessary to correct the radial shortening, the dorsal tilt of the radius, and the widening of the distal fragments. The method adopted by the author is discussed. This form of immobilization not only maintains good reduction but allows unrestricted and comfortable motion of the fingers. Immediate motion of the fingers, elbow, and shoulder are encouraged. Active use of the fingers minimizes edema and light work is started as soon as possible.

The Opponens Spacer

W. E. Landmesser, Ruth C. McCrum and John C. Allen, AM. J. OCCUP. THERAPY, 9: 112-117, May-June, 1955.

The authors present a discussion of an opponens spacer, developed to facilitate opposition in the cerebral palsied child. The device has been made for 44 patients. The opponens spacer acts as a guide to space the thumb and forefinger in the most functional position for active opposition. It regulates adduction of the first and second metacarpals, provides a trough for kinetic opposition, and controls the effects of subluxation and improper timing.

There are two basic patterns for the spacer; the block spacer for the correction of hyper-opposition, and the support spacer for the correction of hypo-opposition. The basic

material for the splint is a type of plastic molded and prepared to fit the individual patient. An adjustment and training period is necessary before the full time use of the space is attained. The appliance should be worn for progressively longer periods until the patient can tolerate it for a full day.

The opponens spacer represents a compromise between theoretical and practical considerations. The minimal loss of tactile surface of the hand is well compensated in most patients. It may not be useful in handling larger objects, but then the spacer can be removed. It is sometimes useful in helping to develop habit-patterns of opposition. It is light, sturdy, easily applied, and readily cleaned. It is important to remember that the opponens spacer can only assist and not initiate function.

Spa Therapy and Rehabilitation for the Aged

Walter S. McClellan, GERIATRICS, 10: 333-336, July 1955.

Many patients visit spas in this country, in Europe, and in many other parts of the world. The majority of patients are in the middle or later years of life.

By definition a spa is an institution where nature has provided remedial agents such as mineral waters and peloids or muds, where adequate facilities are available for their use, and where physicians are available to direct the program for the patient.

At the spa, the natural agents which are utilized in a treatment program usually require three to four weeks. Additional treatments include sweating procedures, radiant light and heat, electrotherapy and mechanical therapy, as well as massage and active and passive motion. To these may be added regulation of diet, proper rest, exercise, and recreation.

Spa therapy cannot provide the total answer for any elderly patient who has a condition suitable for such treatment.

Abstractors for November

We wish to express our appreciation for the assistance given to the editors by the following abstractors:

Margot Trimble
Elizabeth Heckel
Virginia Lee
Jean Cuthbertson

Book Reviews . . . . .

Changing Attitudes Towards the Disabled. *Edited by Norah Hill, A.R.R.C. Cloth. Paper $3.00. Pp. 287. Central Council for Care of Cripples, London, 1955.*

This book is a complete reporting of the proceedings of the Sixth World Congress of the International Society for the Welfare of Cripples held at the Hague, September 13–17, 1954. The speeches of the main speakers are given in full and the remarks of the formal discussants and those participating in the general discussion are well summarized by the editor who is to be congratulated for her excellent organization of the material covered by these meetings.

In the main, the conference was a summing up of the present status of work with the handicapped in each country represented. Administration and organization of services, medical, social, and vocational problems and general philosophies and trends of treatment were discussed. It was highly interesting to this reviewer to note the various ways in which the problem is being met throughout the world, the total giving one a picture of the evolution of the philosophy of treatment of the disabled.

Because of its scope this book will be of interest to anyone concerned with rehabilitation, whether it be on the organizational or treatment level. The various specialties involved, social, vocational, and the ancillary medical services, will find specific information relating to their fields, but perhaps the chief value of the book is the long view of the total problem which it gives the reader through an international exchange of experiences and ideas.

The Medical Care of the Aged and Chronically Ill: With Particular Emphasis on Degenerative Disorders, Advanced Cancer and Other as yet Incurable Diseases. *By Freddy Homburger, M.D., Research Professor of Medicine, Tufts College Medical School. Cloth; Price $5.75. Pp. 253; illus. Little, Brown and Co., Boston, 1955.*

The purpose of writing this book is succinctly expressed in the opening paragraph. This states: "Some of the chronic diseases and some of the complications of aging can be warded off by intelligent preventive medicine employing all the knowledge available today. This is a point of view which, though realistic, is too often ignored."

The author goes on to say: "The attitude of many physicians and of today's medical students when faced with an aging individual is often one of resignation and lack of interest. Yet these patients present some of the most rewarding opportunities for preventive as well as curative medicine."

The first chapter is titled "The Role of the Modern Physician in the Management of Chronic Illness." The succeeding chapters are: Management of Osteoporosis, Arthritis, Malnutrition and Debilitation, Advanced Cancer (various organs and tissues discussed individually), Hemiplegia, Paraplegia, Management of Distressing Complications of Chronic Illness, and Nursing Problems in Chronic Disease. Each chapter is organized under concise subheadings which always set forth The Problem, Diagnosis, Differential Diagnosis, and Specific Therapy. Additional important subheadings are incorporated in the various chapters.

The information is concise, explicit, practical, and up to date. Specific drug therapy, details of nursing care, early exercise technics, basic training in Activities of Daily Living — particularly hygiene, eating, dressing, and toilet activities are outlined. Physical, occupational, and speech therapy are discussed as they apply. The discussion of classification of aphasia is timely. So too is the comprehensive program of bladder and bowel training following a specific diagnosis as to the cause of incontinence in various kinds of chronic illness.

This book is a stimulating as well as a practical reference book. It is interesting and easily readable. The content can be readily understood by paramedical as well as medical personnel. The bibliography is also comprehensive. Physicians and all others who read this book should be stimulated with the realization and knowledge of optimistic treatments that are possible in most chronic illnesses, and modern palliative technics that can make a terminal illness more enduring for the patient as well as his family.

Professional Adjustments. *By Sister Mary Isidore Lennon, R.S.M., R.N., M.A.M.S.W., Director of St. John's Hospital School of Nursing, St. Louis, 1939–1945. Cloth. Price $4.75. Pp. 381. C. V. Mosby Company, St. Louis, 1954.*

Professional adjustments are a constant aspect of the training of students planning to enter any profession and as these adjustments are understood and complied with so are formed the mature attitudes of the professional person. This book by Sister Lennon was written primarily for nursing schools within Catholic Hospitals and therefore contains much information relative to Catholic customs and religious procedures which is not applicable to all school situations. However, the practical suggestions given for ethical conduct in any field associated with medicine can well be applied to student training in the paramedical services.

The format of the book is readily conducive to its use as a textbook as each chapter contains an inclusive list of references to the specific material under discussion, a vocabulary of terms necessary for the students' understanding of nursing, an outline summary, and multiple choice review questions. Additional suggested readings and a glossary of terminology are listed at the end of the book.

Subject matter is divided into six units, which briefly are: Guiding Principles; Problems of Professional Conduct and How to Study Them; Developing Individual and Group Standards of Professional Conduct; Social, Economic and Professional Outlook of the Prospective Graduate; Choosing a Field of Work and Adjusting to It; and, Professional Organizations and Activities.

In abstracting the pertinent information from each chapter, an instructor in a school of physical therapy will arrive at suggested concepts for directing the student in discipline and conduct, personal appearance and hygiene, recommended communication technics between medical personnel, and interpersonal and interprofessional relationships within our modern society.

Very practical explanations are given as to the legal responsibility of the nurse, the economic problems encountered in the profession, and the needs and methods of achieving proper counseling and guidance. Sample letters for applying for a position are included in one chapter and should prove helpful to the student. Another excellent chapter is devoted to a brief history of the nursing organizations in this country, with their current publications. This chapter includes requirements for state registration and eligibility for membership in the essential professional organizations. Continued emphasis is made throughout the chapter on the importance of the nurse accepting professional responsibility by maintaining an active participation in professional organizations as a part of social obligation for the improvement of all health services and relationships between professions.

A final chapter predicts future trends in nursing and proposes plans of organization for the centralization of nursing education. Many of the problems encountered in nursing education have their counterpart in physical therapy, and better understanding and progress in education could be achieved by joint study and research within the medical professions.

This book is easily readable and the subject matter is interestingly expressed, therefore it should be of benefit to professional students if, in part, it is incorporated in their training program.

Two Legs To Stand On: My Battle With Cerebral Palsy. *By John D. McKee. Cloth; Price $2.75; Pp. 180. Appleton-Century-Crofts, Inc., New York, 1955.*

"There are as many different ways of walking as there are persons who walk . . . a person's method of locomotion is almost as distinctive as a fingerprint." Mr. McKee makes this observation early in this autobiography of his growing years and early adulthood as they were shaped and molded by the accident of his having been born cerebral palsied. However, this statement, reflects an attitude toward his handicap whose development can be traced throughout the book. With the expressed objective of giving encouragement and renewed hope to other cerebral palsied individuals and their families he says in the preface, "I have attempted here to present a picture of my life as a cerebral palsied person, not so much from the point of view of the peculiarity of that life as from that of the attempt I have made at normality in all departments of living."

The first of three parts, entitled *In the Beginning*, describes the author's boyhood life with his family. At his birth little was known of his condition, a spastic triplegia. The search for a cure, the travel from one doctor or therapist to another, is briefly reviewed. The White Pill Period, the Osteopathic Period, the Chiropractic Period, and the Electric Shock Period preceded the Brace Period. His first steps alone came during this period, just before his sixth birthday. The first feeling of independence given by the braces and parallel bars is expressed, along with the observation that hovering parents can't teach one everything—some things we must learn by ourselves.

A He'll Grow Out of It Period was followed by an Operation Period. The first operation, the exercises faithfully done after each of the five, the casts worn at night, the constant help and encouragement of his mother in his walking attempts, and a full discussion of the art of falling are included here.

While his mother occupies a large space in the first part, the last chapter tells of the many valuable experiences he shared with his Dad, who carried him or helped him to walk beyond the range of his creeping, and kept him so busy finding out what he could do that he didn't have time to worry about things he couldn't do.

Part two, called *The Widening of the World* discusses his gradual participation in the wider social sphere beyond his family. A second grade rhythm band and playground athletics were the beginning. A much needed sense of "belonging to the world" came with scouting, and playing the drum in the school band "opened further vistas of independence" for him. When he could no longer participate in athletics, debating provided an outlet for his energies and gave him a weapon, words, with which he could compete in the world and by means of which he won his school letter.

His need for actual physical competition and the ways in which he tried to satisfy it come up many times. He discusses his attempts to participate in a variety of sports, the immediate satisfactions derived from them as against the long-range prospects of independent walking which weren't always enough to relieve the boredom of exercises.

College and Beyond, the third division, traces the development of his vocational interests. His early ambitions to be a baseball pitcher, then a flier, were supplanted by a

gradual decision to make writing his career, and he expresses the feeling that the development of "mental and imaginative aptitudes which might have lain dormant" compensated for his physical inability to pursue the athletic career he would have liked. Three years in the public relations office of Kansas Wesleyan University served as "basic training" for this career, enabling him to prove to himself that he could do the work required. Summer work on weeklies offered further chance to explore his chosen career and measure his ability to compete in it.

Mr. McKee concludes with a description of the difficulties he experienced in learning to swim and to drive a car when he was older. He stresses the need for courage and faith in oneself, ending with the statement that "those who believe in themselves will achieve the goals they set for themselves, at least within their physical limitations and sometimes seemingly beyond."

John McKee has succeeded in presenting a picture of his life as a cerebral palsied person which is informative and thought provoking. Written from the point of view of his attempts at normality, his clear, concise presentation of pertinent facts, his fine sense of humor, and his ability to place things in clear perspective, combine to instill in the reader Mr. Mckee's own attitudes toward his cerebral palsy as they are developed throughout the book. It seems to me these attitudes are representative of those of many intelligent cerebral palsied persons of his generation. This story, and others like it, can be very helpful to all of us, whether we live and work directly with this condition or only occasionally meet such a person and want to know more about him. I would add one word of caution, however. Because of the great variation in type and degree of handicap among the cerebral palsied, and because of the growth in understanding of the condition and methods of treatment and education in recent years, the book may be of more value to the student of the cerebral palsy problem in general than to the young parent looking for specific answers. I would recommend it highly to physical therapists and other professional personnel working with the adolescent and young adult with cerebral palsy, and to many of these young people themselves and their families, but suggest caution in recommending it to parents of the young cerebral palsied child, or to others whose concern is mainly with these smaller children because of the differences in the problems they face today.

A Textbook of Physiology. 17th Edition. *By John F. Fulton, M.D., Sterling Professor of the History of Medicine, Yale University School of Medicine. Cloth; Price $13.50. Pp. 1275; illus. W. B. Saunders Co., Philadelphia, 1955.*

Since 1905 this text has been a standard in many medical schools and physiology departments. Many sections in this new text, such as the first seven chapters on the nervous system, the section on body fluids and kidney function, and that on respiration, have been completely rewritten, others have been revised. A new chapter on acetylcholine and energy transformations in nerve cells has been added. Thirty contributors eminent in their respective fields have assisted in the compilation of this 64-chapter text book.

The first four sections (26 chapters) are particularly valuable reference material for students and physical therapists. The subjects included here are: principles of nervous activity; muscle; central nervous system, motor function; and the nervous system, sensory function. If not used as a textbook, it would be well to consider this physiology for supplemental study.

Fractures In Children. By Walter *P. Blount, M.D., F.A.C.S., 1955 President American Academy of Orthopedic Surgeons. Cloth. Price $9.50. Pp. 279; illus. Williams and Wilkins Co., Baltimore, 1954.*

Dr. Blount has documented this excellent monograph with roentgenograms taken and clinical results determined many years following the initial injury. Examples of the ordinary fractures occurring in children have been presented clearly by a brief verbal summary accompanied by excellent roentgenograms. Spontaneous correction of linear deformity following fractures of long bones is emphasized throughout the book. The lack of spontaneous correction occurring with certain epiphyseal injuries and rotary fractures is also emphasized. The care of the extremity after plaster has been removed is described carefully only to repeat that forcible stretching of joints, either manually or by weights, is neither necessary nor desirable. This is particularly true about the elbow.

The book can be used for reference by the specialist or for information by the student. There is a good index and a comprehensive bibliography.

This is by far the best book available about this important and frequently misunderstood subject.

Handbook of Medical Treatment. *Edited by Milton J. Chatton, M.D., Director of Medical Institutions, Santa Clara County, California; Assistant Clinical Professor of Medicine, University of California School of Medicine, San Francisco; Sheldon Margen, M.D., M.A., Associate Research Biochemist, Department of Psysiological Chemistry and Clinical Instructor in Medicine, University of California School of Medicine, and Henry D. Brainerd, M.D., William Watt Kerr Associate Professor of Clinical Medicine, University of California School of Medicine. Fourth Edition. Cloth. Price $3.00. Pp. 569. Lange Medical Publications, Los Altos, California, 1954.*

This handbook on medical treatment fills an office need for the busy practitioner who requires a ready reference work for the management of patients by disease category. There is a brief introduction to the general aspects of medical care including specific outlines for home management. A quick review of clinical, laboratory, and x-ray findings together with comments on fluid and electrolyte balance adds much to the value of the handbook. General, expectant, and symptomatic treatment programs are then outlined, following which the specific diseases are reviewed by body system.

A section on dietetics and special diets together with special feeding technics employed in selected cases adds to the value of the book. A special appendix on medical rehabilitation and rehabilitation of the hemiplegic patient adds to the interest of the book from the standpoint of the physical therapist and physiatrist. A subject index makes an easy reference file. The composition of the book and the style and type of printing make it difficult to read.

Past acceptance of the first three editions of the handbook assures that the present edition will be well received, particularly since a com-

plete revision of the book has resulted in significant expansion of the scope of the work.

Workmen's Compensation: Prevention, Insurance, and Rehabilitation of Occupational Disability. *By Herman Miles Somers, Ph.D., Ph.M., Chairman, Dept. of Political Science, Haverford College, Pennsylvania; Consultant, teacher, practitioner in administration and social insurances; and Anne Ramsay Somers, B.A., formerly with the U.S. Department of Labor as labor economist. Cloth. Price $6.50. Pp. 341. John Wiley and Sons, Inc., New York; Chapman and Hall, Ltd., London, 1954.*

One of the remarkable facts about the oldest of our social security programs, workmen's compensation, is the lack of information about it. *Workmen's Compensation* represents an effort not only to fulfill this need for information, but also to provide a guide to understanding the program's extensive ramifications.

The primary aim of the authors has been to make this book useful to the wide variety of professional persons who work in or around workmen's compensation, at the same time including the basic information necessary to offer an understandable picture to the beginning student and interested layman.

Workmen's Compensation is a reference and textbook which, from the standpoint of appropriateness of language, clarity of presentation, and form, should place it high on the list of interesting as well as readable books of its type. Actually, this is the first volume to cover all aspects of workmen's compensation—history, legislation, administration, litigation, insurance, actual benefit experience, and the related fields of industrial safety, health, and rehabilitation.

Up to the present time, it would have been extremely difficult to get as much information without engaging in a major "search" project, locating pertinent material from many separate sources and inevitably terminating in a tremendous compilation many times the size of this book, but without its coordinated, instructive and interpretive value.

Aside from the convenience and value of informative data presented, the greatest merits of the book, in the opinion of the reviewer, are twofold: First and foremost, is its catalytic effect on the interest and intellectual participation of the reader; second, is its long-term, far-sighted consideration and value for the future.

Rather than expose the reader to inert facts and figures, as is the case with many textbooks, the authors' method of approach stimulates the reader to think through the implications of various problems and situations presented. This is accomplished by an inquiring, analytical, and yet impartial approach to the entire program of workmen's compensation and its related fields. Actual and hypothetical situations and problems are presented and discussed in terms of alternative actions, solutions, and possible effects or consequences, both current and future.

Beginning with the early history of the program, key issues are appraised, including current trends, disagreements regarding philosophy and procedure, operational differences among states, both successful and less successful; examples of inadequacies and questionable practices prevalent in some state programs; and the expanding role of rehabilitation in its relationship to workmen's compensation and private disability programs.

Without detracting from the value of other chapters in the book, professional participants in the field of rehabilitation will undoubtedly find chapter eight, "Rehabilitation," especially interesting.

Existing concepts and programs of rehabilitation, namely, federal, federal-state, and private programs are discussed, together with an appraisal of the relationship between Vocational Rehabilitation and Workmen's Compensation. Some brief though realistic considerations are given to worker incentives, motivation, the relationship between benefits and lump-sum settlements with that of ultimate rehabilitation, and differing views or philosophies regarding the subject. The need for mutual resolution of problems of coordination and related administrative impediments to rehabilitation on the part of both programs are stressed.

Workmen's Compensation is extremely well indexed and documented with numerous statistical tables, graphs, and references for corroboration or additional related reading. For those who are interested, other compensation systems and acts, including the British and Ontario systems are briefly presented. Bibliographic notes are in abundance.

Workmen's Compensation deserves the highest acclaim for a book of its type, and is definitely recommended reading.

The reviews here published have been prepared by competent authorities and do not represent the opinions of the American Physical Therapy Association.

Our Book Reviewers for November

Margaret Bryce, Instructor in Physical Medicine Course in Physical Therapy, Medical School, University of Wisconsin, Madison.

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Lucian J. Zadronzy, Counselor, Bureau of Vocational Rehabilitation, Connecticut State Department of Education.

Publications and Reprints

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Physical Therapy Offers You a Rewarding Career — An illustrated brochure with information for prospective students about physical therapy, the course of study, and opportunities for a career.

School of Physical Therapy — A list of schools approved by the Council on Medical Education and Hospitals of the American Medical Association.

Sources of Financial Assistance for Physical Therapy Students — 1955.

ORGANIZATION

Code of Ethics of the American Physical Therapy Association.

Personnel Policies for Physical Therapists.

Use of Nonprofessional Personnel — An illustrated pamphlet to assist the physical therapist to determine the need for nonprofessional personnel and to give guidance on inservice training and utilization.

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Physical Therapy in a Small Hospital — Stamm (15¢)

VISUAL AIDS

The following visual aids are available on loan to members and chapters upon request. They should be requested one month in advance of the date to be shown and return shipping costs must be paid by the borrower.

Recruitment

Within Your Hands — Black and white 17½ minute sound picture depicting the education and opportunities for the profession of physical therapy. Each chapter (and district) also has a copy of this film. A special 14½ minute version for telecasting is available from the National Office.

Physical Therapy, A Career of Science and Service — A color filmstrip to interpret physical therapy to high school students and lay groups. Each chapter (and district) has a copy of this and additional copies may be purchased from the National Office at $4.50 per print.

Professional

Slides

Underwater Exercise — A set of 26 Kodachrome slides made at the Orthopaedic Hospital in Los Angeles describing equipment and technics of underwater exercise.

Special Issues of the Review

Polio Issue (July 1951) (25¢)

Polio Issue (July 1952) (25¢)

Polio Issue (July 1953) — 50¢ (10 to 50, 35¢; 50 or more, 25¢)

Cerebral Palsy Issue (February 1952) (25¢)

Functional Issue (November 1949) (25¢)

Abstracts Reprinted

"Haltung," an Abstract from Body Posture by Magnus, and "Head Posture and Muscle Tone," Clinical Observations by A. Simons, abstracted by Signe Brunnstrom, have been reprinted in one pamphlet.

Reprints can be ordered from the American Physical Therapy Association, 1790 Broadway, New York 19, New York. The cost of the pamphlet containing both abstracts is $1.00.

All requests should be addressed to

American Physical Therapy Association

1790 Broadway, New York 19, New York

What's New . . . . . .

101. Muscle Exerciser

Helps patients help themselves move about in bed or take exercise. Enables paralysis victims or those in heavy casts to shift their position or raise themselves for the bedpan. A help for rehabilitation of polio patients *because any number of muscle exercises can be taken in bed.* Hand grips easily lengthened or strengthened. Made of 1" tubular steel; inside size: 41" wide at top, 45" at bottom. 71" high over-all. American Hospital Supply Corp.

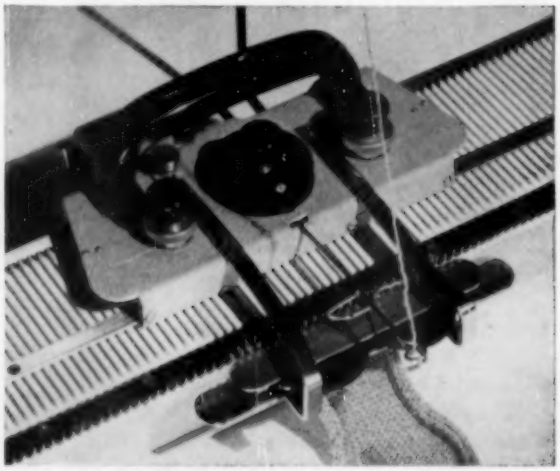
For more information on items write to The Physical Therapy Review, 1790 Broadway, New York 19, N. Y.

Many new items are introduced each month. Some which may be of special interest to physical therapists will be mentioned in this column. The accompanying explanations are made by the manufacturers and have not been investigated by the *Physical Therapy Review.*

102. Bedsore Pad

Alternating pressure point pad has pneumatic cells that run the length of the bed mattress, rather than across the width. Allows edges of pad to lie evenly with no wrinkling, and no tendency to crawl as alternate air cells are inflated and deflated. It reduces the bedside nursing time, and the massage increases comfort. Air Mass, Inc.

103. Training Tool



High-speed lightweight hand knitting machine so simple that an invalid or a physically handicapped person may turn out near-professional fabrics with a hand knit appearance. The device is being offered as a quadruple-duty mechanism for the maintenance of building equipment, as an occupational therapy tool, as an instrument for recreation and as a mechanism for vocational training and guidance. Norca Machinery Corp.

104. Patient Transfer Device

Porto-Lift provides a safe means of eliminating the time consuming physical strain of transferring patients from bed to wheelchair, bath, and automobile. All moving parts of the outfit are made of hardened, chrome plated steel. Completely mobile, with easy-to-operate hydraulic controls for smooth lifting. Porto-Lift Manufacturing Co.

105. Arm Sling Suspension

Unit consists of a pair of adjustable horizontal arms attached to vertical standards mounted on mobile, heavy metal base. Arms adjustable from 56 to 63" above floor—in 1" steps. Unit requires maximum floor space of 25 sq. in., and its total weight is approximately 50 lbs. Unit is so constructed that it can be used by patient at a standing table, or in a wheel or straight chair. Ability to elevate sling bar to three positions is added feature for patients who must maintain inclined position. Franklin Hospital Equipment Co.

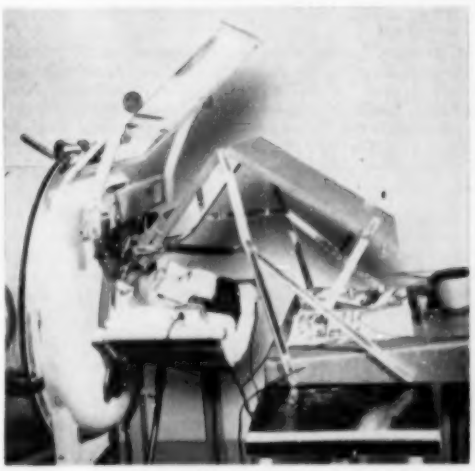
106. Portable Respirator

Complete portability—easily moved—operates up to four hours on auxiliary battery. Patient has complete freedom of head, arms, legs—can use regular chair or bed—no interference with bed positions. Nursing care readily administered. Variable inspiration-to-expiration control. Can be fitted and in operation in 30 seconds. Monaghan Company.

107. Polio Lung Safety Device

When attached to an iron lung, this device will sound an alarm to warn of falling air pressure, power shortage or development of mechanical condition that could prove dangerous to the patient. Also gives warning should someone forget to turn it on. Electro-Alarm Safety Devices.

108. Page Turner



Medical Equipment Laboratories calls this machine the Turn-A-Page. It measures only 24 x 20 inches and is powered by electricity from any standard 110-115 volt,, 50-60 cycle outlet. It turns pages either backward or forward at the slightest touch of a turret switch. Switch mechanism is so delicate that when properly placed, the puff of the reader's cheek or the twitch of his toe is movement enough to operate the machine. Turning arm lifts page and wire loop complete cycle, holding page flat.

Eighth Annual Conference on Electrical Technics in Medicine and Biology

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Sponsored by American Institute of Electrical Engineers, Institute of Radio Engineers and Instrument Society of America.

To provide liaison and better understanding among workers in electronic engineering, medical research and related disciplines, to advance the development and application of electrical technics in medicine and biology.

The Program will include

Recent Advances in Angiocardiography
Inspection trip to the National Institutes of Health, Bethesda, Maryland
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Inspection trip to Naval Medical Research Institute, Bethesda, Maryland
Instrumentation in Medicine and Biology
Inspection trip to National Bureau of Standards, Washington, D. C.

Classified WANT-ADS

GROWING DEPARTMENT in new 250-bed general hospital needs qualified female physical therapist now. Very well equipped department has been open two years. Wide variety of cases, 40% hospital patients, 60% outpatients. Forty-hour week, good salary. Lovely Colorado college town, near Denver and mountains. Reply: Miss Myra Garhart, Physical Therapy Department, Weld County General Hospital, Greely, Colorado.

IMMEDIATE OPENING in Cincinnati as HEAD of physical therapy department for large, chronically ill, geriatric and rehabilitation hospital, connected with general hospital of 450 beds. Salary commensurate with experience. Other benefits of employment. Address replies to Box No. 40 care of the Physical Therapy Review, 1790 Broadway, New York 19, N. Y.

WANTED: QUALIFIED PHYSICAL THERAPIST to start Home Service Program (Jan. 1, 1956) with an Outpatient Physical Medicine, Rehabilitation Center. Good personnel policies. Salary dependent upon experience. Write: Gloria J. Fitzpatrick, RPT, Director, Ingham County Curative Workshop, 615 North Capitol, Lansing, Michigan.

WANTED: QUALIFIED physical therapist to HEAD department in modern 275-bed general hospital located in four-city area of 200,000 overlooking the Mississippi River. A beautiful locality in which to work and live. A three-hour drive from Chicago. Our spacious new air-conditioned department of approximately 2600 square feet is newly equipped with hubbard tank, four whirlpools, and every piece of electrical, hydrotherapeutic, and exercise equipment of proven value. A real opportunity for initiative. Our former head therapist was with us 18 years until her recent death. Salary open. Four weeks vacation with pay, paid holidays, retirement plan with disability and death benefits. Meals and laundry provided. Contact Miss Marguerite N. Brooks, Superintendent, Moline Public Hospital, Moline, Illinois.

OPENING for physical therapist in an orthopedist's office in private practice. Department well equipped. Salary or commission as desired. Address replies to Physical Therapy Review, 1790 Broadway, New York 19, N. Y.

WANTED: Physical therapist for HEAD of DEPT. for 155-bed general hospital with outpatient service. Salary open, 5-day, 40-hour week, liberal vacation and sick leave policies. Reply Personnel Mgr., Fresno Community Hospital, Fresno 1, California.

PHYSICAL THERAPIST: PERMANENT staff position for well equipped department in modern 200-bed general hospital. Forty-hour week, liberal sick leave, vacation and holiday policies. Write: Personnel Department Marymount Hospital, Garfield Heights 25, Ohio.

WANTED: PHYSICAL THERAPIST. Home and center therapy, parent instruction. Excellent salary. Transportation furnished. Good personnel practices. Liberal vacation and sick leave policies. Write Jack Sabloff, M.D., Director, Crippled Children's Division, State Board of Health, Dover, Delaware.

WORK IN SOUTHERN CALIFORNIA: Physical therapists needed to staff new Rehabilitation Service at Rancho Los Amigos. All aspects of rehabilitation of all age levels including post-acute and convalescent care of respirator patients, general medical, and orthopedic disabilities and all aspects of bracing and prosthetics. In-service training program under direction of physical therapy instructor. Five-day 40-hr. week, holidays, sick leave, vacation privileges, retirement benefits with Civil Service rights. New building and most modern equipment available. Vacancies include staff therapists, senior therapists, and instructors. Quarters available, laundry furnished. Good beginning salary, annual increases. Write: Personnel Director, Rancho Los Amigos, Hondo, California.

Classified WANT-ADS

WANTED: ADDITIONAL physical therapist for 140-bed Children's Hospital. Treatments stress rehabilitation. Salary good, 3 weeks' vacation, 2 weeks' sick leave, 40-hour week. Apply: Jewell Radford, Physical Therapy Department, Mary Free Bed Children's Hospital, Grand Rapids, Michigan.

STAFF THERAPIST: Attractive position which offers opportunity for participation in a program of comprehensive rehabilitation. Full accreditation; 70-bed orthopaedic hospital. Apply Miss Betty O. Nichols, Supervisor, Physical Therapy and Rehabilitation, Sunny View Hospital, 124 Rosa Road, Schenectady, N. Y.

PHYSICAL THERAPISTS, MALE OR FEMALE, full or part-time, for rapidly expanding rehabilitation center. Adults' and children's program. Liberal salary and holidays; one month's vacation. Write Mr. Breuer, R.P.T., Bird S. Coler Hospital, Dept. of Rehabilitation, Welfare Island, New York.

PHYSICAL THERAPISTS, work with a physiatrist in interesting programs at Philadelphia General Hospital and in the Welfare Department. Completion of an approved course of training in P.T. leading to either a degree or certification P.T. and possession of or eligibility for a license to practice P.T. in Pennsylvania. Civil Service Security and benefits. Contact Mr. Milton, Personnel Department, Room 975, City Hall, Philadelphia 7, Pa.

WANTED: A QUALIFIED physical therapist, female, for well equipped department in a modern 275-bed general hospital with outpatient service, paid vacation, sick leave, 6 holidays, salary open. Apply Robert M. Murphy, Administrator, Lima Memorial Hospital, Linden and Mobel Streets, Lima, Ohio.

WANTED: A QUALIFIED physical therapist for a rapidly growing physical therapy department in a 200-bed general hospital, salary commensurate with experience and qualifications. For information, write to Audrey Shade, Administrator, St. Luke's Hospital, Marquette, Michigan.

IOWA METHODIST HOSPITAL, Des Moines, Iowa, needs qualified physical therapist. Hospital has 400 beds, including 100-bed Raymond Blank Memorial for Children. Postpolio cases and in- and outpatient work. Competent professional staff and assistants, excellent working relationships. Apply: Bruce D. Root, Personnel, Director.

PHYSICAL THERAPIST: In Hospital-School for rehabilitation of children with orthopedic handicaps. Complete interesting program. Good salary, merit increases. Annual paid vacation, sick leave, excellent retirement plan. Write Vera E. Dennis, Director of Physical Therapy, Illinois Children's Hospital-School, 2551 N. Clark, Chicago 14, Ill.

WANTED: Physical therapist for 288-bed general hospital. Forty-hour work week, social security, Blue Cross - Blue Shield, sick benefits, 3 weeks' paid vacation, good salary. Apply Personnel Director, Ball Memorial Hospital, Muncie, Ind.

IMMEDIATE PLACEMENT for qualified physical therapist in active department of new 120-bed hospital. Post polio and in- and outpatient work. Excellent salary and personnel policies. Apply: Administrator, St. Joseph Hospital, Aberdeen, Washington.

QUALIFIED SENIOR THERAPIST and staff therapist for outpatient rehabilitation center serving Westchester County. Salaries commensurate with experience. Contact, Eugene Moskowitz, M.D., Director, Mobility, Inc., 10 Heatherbloom Road, White Plains, New York.

PHYSICAL THERAPIST with experience in C. P. as combination Director-Physical Therapist at C. P. Center. Forty-hr. week, air-conditioned building, good salary, incentive increases, all holidays, 3 weeks' vacation, time off for professional meetings. Write A. N. Johnson, 2610 Virginia Street, Paytown, Texas.

WANTED IMMEDIATELY: Two qualified field staff physical therapists for home-bound service in a generalized voluntary public health nursing agency to work under qualified physical therapy supervision. Salary dependent upon experience; 40-hr., 5-day week; 8 holidays; 22 working days vacation; 12 working days sick leave. Apply Assistant Director, Visiting Nurse Society of Philadelphia, 1340 Lombard Street, Philadelphia 47, Pennsylvania.

IMMEDIATE PLACEMENT for qualified therapist, male or female to head P.T. Dept. in 140-bed general hospital in university town: treating post acute and convalescent polio; orthopedic, neuromuscular and musculoskeletal disorders; 40-hr. week, 3-week paid vacation and sick leave. Congenial working conditions with cooperative staff. Salary open. Will pay expenses for interview. Good opportunity for initiative. Write or call collect Leonard Egstrom, Grand Forks Deaconess Hospital, Grand Forks, North Dakota.

Classified WANT-ADS

RATES

The rate per insertion is 75c per line. Typewrite your advertisement carefully and count 50 characters and spaces per line.

ALL WANT-ADS MUST BE PAID FOR IN ADVANCE. Make checks or money orders payable to the American Physical Therapy Association.

Closing date for copy and cancellations is two months preceding publication date.

Institutions or physical therapists who do not wish their identity known may arrange for Blind Ad Code No. All such want-ads must include the following which will be counted as 2 lines:

Address replies to _____ care of **The Physical Therapy Review, 1790 Broadway, New York 19, N. Y.**

IMPORTANT

It is understood and agreed that the publisher shall have the right to reject or change the wording of any advertisement which in the opinion of the Editorial Board shall not be in agreement with the ethical standing of this publication.

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